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ABSTRACT

These proceedings contain 10 keynote papers and more than 100 papers from an international conference on the theme of developing distance education. The keynote papers are: (1) "Communications Technology" (Yoshia Abe); (2) "Continuing Education. New Needs and Challenges for Distance Studies" (Urban Dahllof); (3) "Distance Education and National Development" (John S. Daniel); (4) "Distance Education--A Developing Concept" (Jack Foks); (5) "Organisational Autonomy and Coordination in Distance Education" (Patrick Guiton); (6) "Distance Teaching and Credit Transfer" (John Horlock); (7) "How to Develop a Correspondence Course" (Michael P. Lambert); (8) "If Student Services Are So Important, Then Why Are We Cutting Them Back?" (Ross Paul); (9) "Women in Distance Education" (Christine von Prummer, Gill Kirkup, and Barbara Spronk); (10) "Economics in Distance Education: Time for a Change of Direction?" (Greville Rumble). The conference papers represent distance education projects worldwide in elementary and secondary education, higher education, and vocational education. Issues include program administration; the production of instructional materials; the use of telecommunications media, including interactive television, communications satellites, and computer conferencing; program evaluation; teacher education applications; instructional design for cognitive skill development; and student attrition. References are provided in most of the papers. Appended are personal study contracts and related documents for administering distance learning in Tasmanian high schools. (GL)

DEVELOPING DISTANCE EDUCATION

PAPERS SUBMITTED TO THE 14TH ICDE WORLD CONFERENCE IN OSLO -16 AUGUST 88

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INTERNATIONAL COUNCIL FOR DISTANCE EDUCATION

DAVID SEWART

JOHN S. DANIEL

Developing Distance Education

Papers submitted to
the 14th World Conference in Oslo
9–16 August 1988

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PREFACE

Learning at a distance is not a new phenomenon. Indeed it might be said that the Epistles of St Paul provide evidence of an early appreciation of this method of overcoming problems of distance and time. It is, however, in the 20th century and particularly in the last two decades that this form of education has entered strongly into the theory and practice of education throughout the world. The growth of institutions providing this form of support to students has been accompanied by the development of a body of knowledge about the principles and practices which are essential for the creation of a successful and statisfying learning experience for students. Clearly the practices will vary since they must be based upon methods of communication available in particular areas of the world and an emphasis on broadcasting and postal communication is often a reflection of a region's dominant communication medium rather than a conscious choice. Indeed, one of the strengths of Distance Education is the variety of media which have proved successful for it.

ICDE celebrates its 50th anniversary in Oslo this year. In 1938 a group of pioneers from correspondence institutions in 6 countries met in Victoria, Canada and founded the International Council for Correspondence Education. After the Second World War the Council expanded steadily, holding the World Conference in a different country every four years. In the 1960's growth accelerated and the Stockholm Conference in 1965 attracted over 200 delegates from 25 nations. This growth was sustained through the 1970's reflecting the evolution of Distance Education and the creation of "open" Universities and Colleges in many parts of the world. In 1982, at the 12th World Conference in Vancouver, Canada, more than 400 delegates adopted a name change – the International Council for Distance Education – better to express the contemporary diversity of learning media and methods. The Conference in Melbourne in 1985 was only the second such Conference to be staged in the Southern Hemisphere and the success of ICDE as well as the general awareness of the longstanding tradition of Distance Education in Australia, led to a new attendance record of over 700 delegates from some 50 countries.

The 14th World Conference of ICDE celebrates the 50th Anniversary of the association and this book constitutes the basic document of the Conference under the theme "Developing Distance Education". The book contains most of the major presentations and many of the supporting papers on which the Conference is founded and was planned by the Programme Committee of ICDE which consisted of Dagny Blom (Norway), Helmar Larsson (Sweden), Erling Ljoså (Norway), Marjan Lubbers (Netherlands), Torstein Rekkedal (Norway), Reidar Roll (Norway) and David Sewart (United Kingdom) as Chairman. The volume and range of the papers which have been offered for the conference has necessitated difficult decisions but we hope that the book may be seen as representative of the wide range of themes and areas of the world which now enrich Distance Education.

The entire project would have proved impossible without the help of many colleagues. It is a pleasure to acknowledge the support received from Reidar Roll, Janniche Langseth and other staff of the Norwegian Association of Distance Education and in particular Erling Ljoså and his staff in NKS.

We are also particularly indebted to Pat Proctor of the Open University whose efforts have kept the whole project on time. Finally we would like to thank the contributors who have provided such varied and interesting papers. Reading such a wealth of contributions has been a rewarding experience and we hope that readers of the book will now be able to share this experience and make use in their own work of the variety of ideas and practices in the development of Distance Education to which it is a witness.

David Sewart John S. Daniel

Key-notes

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Communications technology

YOSHIYA ABE

PREFACE: COMMUNICATION, TECHNOLOGY AND DISTANCE EDUCATION

Education began as a matter of dialogue, or communication, from its outset. In Greece and Rome, as well as with Confucius and Buddha, dialogue between master and the disciples was the beginning of education. Thus academia grew as an institution where the master and the disciples gathered together to exchange views about their observation and analysis of the issues.

Communications technology, particularly the electronic devices developed in recent years, is capable of overcoming the barrier that distance presents to education. Indeed, new communications technology has the potential to change the very nature of educational instruction processes. It may also change the methods used to manage or administer the instructional system. Recognition of the impact of these technological devices, in fact, resulted in a change in the name of this association from the International Association of Correspondence Education to the International Council of Distance Education several years ago.

Expansion of the educational mission through the use of new communications technology is most visible in the developed world, particularly among the member countries of OECD where are initial distance learning institutions have been established. Following the lead of the British Open University, educational outreach is new but important mission for the higher education system in most of these countries.

In Germany at the FernUniversitat; in Finland; in Norway through the Norskfjernundervisning; in the four provincial institutions of Canada; in Australia at Deakin University; in the United States through telecourses offered through the Adult Learning Services of the Public Broadcasting Service; in Japan with the broadcast based University of the Air; and in the Netherlands, where the new Open Universiteit opened in 1984, a variety of new communications technology is used to reach students. Many of these students are adult, working or homebound and would not be able to participate in higher education without distance education.

Although distance education institutions in the developed world are not large in terms of the numbers of students, they are significant because they serve students off-campus in new and innovative ways. Thus vital development within distance education institutions, is seen in the employment of the new communications technologies.

VARIETY OF SOCIO-CULTURAL INFRA-STRUCTURE

In the United Kingdom the success of the British Open University depends heavily upon the well developed mailing system and public libraries, access to which had been well established before the formation of the new system. In Korea, the Korean Air and Correspondence University makes beneficial use of the existing national university system for providing schooling and examinations as well as part-time faculty. Similar arrangements have been adopted by the Sukhothai Thammathirat Open University of Thailand, the Terubuka University of Indonesia and by many other institutions of distance education.

In Japan, however, television, radio and other communications technologies are extensively used, partly because its elementary and secondary education provided the necessary infrastructure for the effective use of broadcasting and other communications technologies in distance higher education. In Japanese elementary and secondary education the curriculum content and the sequence of instruction for each subject, and grade level are specified in detail by the Ministry of Education thus facilitating the provision of instructional television programs commensurate to the sequence of instruction nationwide.

In the United States on the other hand the curriculum content and the sequence of instruction is left to the discretion of local school districts and individual teachers. It is this national standard that makes it easier, or more difficult, to introduce instructional television and radio as support materials for classroom teaching. Most teachers in the United States do not use instructional television regularly, although fifty-four percent of those teachers who had instructional television programming and a TV set used televised programs during 1982–83 according to Ronald J. Pedone ("Instructional Television in Elementary and Secondary Education", National Institute of Education, June 1984).

PUBLIC AND PRIVATE INITIATIVES IN THE ADOPTION OF TECHNOLOGY

Because the Japanese elementary and secondary curriculum is cumulative and demanding, substantial numbers of students fall behind. Parents are anxious to provide whatever help they can and often pay for outside assistance when necessary. In Japan, students needing academic reinforcement most commonly attend a juku, or private proprietary educational institution, which is designed to enable children to keep abreast of the demanding curriculum.

Juku operators are often keen in developing technologically supported programs of instruction. For example, in view of the recent mass sales of Family Computers to elementary school pupils throughout Japan in excess of 10 million sets as of 1987 — a juku chain organization developed a special interface to combine the use of a Family Computer, a TV set (used as the display) and a cassette tape for educational software. New educational software for Japanese language, social studies, arithmetic and science are produced every month and utilized by the company's approximately 1,0[illegible]0,000 correspondence students at the fourth and fifth grade level. This is the simplest and cheapest CAI system to support students who find it difficult to keep up with the standardized classroom instruction. The cost of a Family Computer is about $US50 and the interface is about $US90.

It is interesting to note, in this context, the differing arrangements in various countries regarding who is to bear the cost of education. In the United States, for example, elementary and secondary education is regarded as a birthright for all citizens. In Japan also education is compulsory and, in principle, publicly supported up to the 9th grade. Most countries in the world today consider the provision of elementary and sometimes secondary education to be a public responsibility.

Although access to higher education has increased in the past three decades, it is still not seen as a universal right. There are, and always will be, questions about who should pay for higher education. Whereas higher education is often publicly supported in European countries, in Japan, the United States and most of the developing countries the responsibility for financing this level of study has most often been left to the student.

Nevertheless within the United States most states have made a commitment to providing inexpensive higher education through the systems of community colleges. It is understandable, when one considers the need to reach such large numbers of students with such little money, that public community colleges were at the vanguard of producing, disseminating and utilizing telecourses as a means of offering higher education to all the citizens in the American community. It may also be noted that approximately 80% of college and university students are enrolled in publicly financed institutions and these institutions often make use of available telecourses.

According to the 1979 CPB/NCES Higher Education Utilization Study, 72% of colleges and universities in the United States make some use of television and 25% offer complete courses over television; 1978–79 enrollments in television courses totalled approximately half a million. Peter Dirr's 1985 Study revealed substantial improvement both in terms of the quality of the telecourses and the quantity of enrolment thanks to the institutionalizing of the Adult Learning Services at PBS, the foundation of the International University Consortium and the provision of substantial funding for the production of distinguished telecourses by the Annenberg/CPB Project.

In Japan on the other hand approximately 80% of college and university students are enrolled at private institutions which rely on student tuition and fees to cover, on average, up to 80% of the current expenses, with the state providing about 20% of the costs. College correspondence courses were incorporated into the official education system in 1947 with the explicit purpose of providing access to college education for working youth who could not afford to attend traditional college on a full-time basis. All the 12 four-year and 10 two-year Japanese institutions offering correspondence courses are private and financed almost entirely by the tuition and fees of the students.

Apart from college correspondence courses which depend on print and mail as the principal media of instruction there are as yet only a few opportunities in Japan for those who did not enter college upon graduating from high school to go back to college. Since virtually all traditional colleges and universities admit students based on their performance in entrance examinations (with the minor exception of small quota for adult students in a few colleges and universities) and because the traditional cycle of Japanese education is structured for the young people who are peaking in their exam-taking capabilities at the conclusion of high school, adults find it extremely difficult to enter formal colleges or universities after a working life of several years.

There is now, however, growing interest in improving opportunities for adult education. National policymakers have become increasingly concerned about such problems as the ageing of the population, the anticipated labour shortage and the need to re-educate middle-aged and older people. One of the major recommendations of the Provinsial Council on Educational Reform submitted to the Prime Minister in 1987 called for the formulation of an educational system to meet the needs of continuing education.

These factors have given rise to educational alternatives such as the University of the Air, which accepts adults who wish to enroll without an entrance examination. The university, which owns its own television and radio stations, broadcasts a wide range of courses continuously from six o'clock in the morning to twelve midnight; the courses are offered via television and radio and supported by printed textbooks, face-to-face instruction at study centers and correspondence instruction. By using these communications tools, the University of the Air students may work towards a fully accredited bachelor's degree.

This is a unique example of the use of television and radio broadcasting as the principal medium for higher education. The University of the Air is also noteworthy because, in a country where private initiative so dominates most spheres of education, public commitment to this institution is made clear by its subsidy of nearly 90% of the school's operational cost; student fees are minimal.

COMMUNICATIONS TECHNOLOGY AND DISTANCE EDUCATION

Broadcasting is without doubt, the system that can deliver education most widely, cheaply (if there is a large clientele) and effectively to students scattered "at a distance". The production of visual and audio courseware and the use of television and radio broadcasts have greatly expanded access to education to those who could not have access to it otherwise.

No matter how strong a device broadcasting is as a medium of distance education however, it has an intrinsic weakness in assuring interactive learning. From the students' viewpoint distance education should be an educational system which makes learning available either at home or during spare time at work. Students study individually, share in the payment of educational costs even if it is partial and comparatively inexpensive, and depend on their own initiative for learning. They find therefore, that distance education via mass media only partially satisfies their ideal of a learning opportunity. They ask for their money's worth which might easily undermine the goal of providing cheaper educational opportunities; and they expect their personal questions answered promptly, even though they are raised at their home study sites.

Considering the fact that distance education is an educational system based on the needs of the students, the students' viewpoint must be given ample consideration. In order to fully achieve the missions of distance education, the employment of modern technological devices has thus become indispensable.

Individualized and interactive communication between the instructors and the students has become economically and practically feasible due to the introduction of new electronic media such as facsimile communication, microcomputer communication, electronic boards, scanning television and pickup phones, CATV and highly optical visual systems as well as communication satellite. Research and development into the use of these devices for distance education has been promoted in Japan by the National Institute of Multimedia Education (NIME).

An experiment using facsimile was carried out in conjunction with several courses offered by the University of the Air. Facsimile was found to be particularly effective in a poetry course where students wrote and submitted short poems via facsimile and the instructor gave comments immediately afterward, also via facsimile. In view of the rapid diffusion of office facsimile, even in small shops and factories, and of inexpensive personal facsimile using the same telephone line without monopolizing a line for facsimile communication, the application of this technology may provide an excellent interactive learning opportunity for many working people in small businesses and salaried workers.

Using computers and communication in an interactive educational process has been the subject of experiments both domestically and internationally. On-screen exchange of communication has been conducted through computer terminals in several subjects by connecting students at several colleges and the NIME tutors via telephone lines and the host computer. Contact is made either simultaneously or with a time lag by saving messages on the computer. This technology makes it possible to effectively overcome the hurdles of both distances and time. A serious bottleneck in this plan, however, is the strong allergy of Japanese adults to key boards which may be derived from a cultural heritage of penmanship in Chinese characters.

A combination of electronic boards, pick-up phones and scanning television are being used between the NIME laboratory and several study centers, located some 1,000 kilometers away, where corporate workers gather. Some years ago a similar experiment, called "Cyclops", was conducted by the British Open University but it was terminated for technological and financial reasons. In Japan, these hurdles have been overcome. The primary objective of this experiment is to make effective use of various existing facilities for interactive education rather than constructing new single-purpose facilities. By doing this the University hopes to economize on the cost of interactive education as well as minimize the physical burden for students who otherwise might be required to commute to the learning site. So far both instructors and students have recognized the effectiveness of this method and its adoption for practical purposes appears to be promising.

The highly optical visual system is a completely interactive visual communication system in which video cameras are set up in homes and in the studio-classroom. The systems are connected by optical glass-fibre cables and information is processed through a computer. This system is almost an ideal alternative to face-to-face instruction. An experiment using this system has been conducted at a site constructed in Nara prefecture; however, in terms of cost, at the present level of technological development it is far too impractical for educational purposes.

The communication satellite is one of the most promising technologies available to strengthen distance education. Several colleges in Japan have begun to receive beams via Intersat and to use CNN and other programs for instruction. Satellite communication via Venus P and other services is extensively used by many researchers and educators.

The extensive use of instructional television and radio in elementary and secondary schools and the widespread use of family computers among young pupils provided in Japan a strong infrastructure for higher education to adopt new communications technology. And yet the various technologies still require much experimentation and careful consideration before they can become widely used and have a positive impact on the innovative advances in distance education.

RAPID GROWTH OF DISTANCE EDUCATION IN ASIA AND THE PACIFIC

Newly industrialized countries and developing countries in Asia and the Pacific are particularly noteworthy in the utilization of distance education for development. Korea Air and Correspondence University was inaugurated in 1972 and today enrolls about 300,000 students. Allama Iqbal Open University of Pakistan was open in 1974 and its enrollment now is about 73,000 students. Sukhothai Thammathirat Open University of Thailand was established in 1978 and its students number as many as 450,000. In 1980, Sri Lanka Open University was established with emphasis on technological education and 12,000 students are enrolled today. In 1984, Terubuka University was established in Indonesia and in 1985, both Indhira Gandhi National Open University of India and the University of the Air of Japan were opened.

These institutions are all autonomous higher eductiON institutions, strongly supported by the government of each country and given legal status to grant at least a bachelor's degree. The degree of emphasis they place on particular media of instruction varies from one institution to another but they all list printed materials, television, radio, video and audio cassettes, correspondence instruction and telephone guidance among the media mix.

Efforts toward regional cooperation among the above mentioned institutions bore fruit in November 1987 in the form of the Asian Association of Open Universities (AAOU). Support for the AAOU from the UNESCO Principal Regional Office for Asia and the Pacific and from the Asian Development Bank has been positive. The United Nations University, in conjunction with the British Open University, has been instrumental in building up an information network for distance education also.

TEACHERS, STAFF AND STUDENTS IN DISTANCE EDUCATION

Teachers play an integral role in the development and delivery of courses, programs, and counselling provided through the new communications technology. Studies in the United States and Canada however, have shown that many teachers participating in distance education programs were teaching only part-time, while holding other jobs separate from their academic positions.

Good communications technology based courses or programs must be the result of a combination of many talents. In order to develop such courses a group of people with diverse expertise needs to cooperate. All course teams should include a scholar deeply versed in the subject who, at the same time, is also a talented and sensitive teacher. To form a good distance education team, the academic abilities of teachers must be combined with many others including editors and graphic designers, media-oriented television and radio program directors, actors and actresses, as well as a visual database and other resources and the services of computer laboratories and animation studios.

Some of the techniques and skills required are quite different from those which traditional academics have used in the past as tutors or classroom instructors. The use of new communications technology requires more organization, more advanced planing and significantly more preparation time than would be required to teach a traditional class.

PRINCIPAL MEDIUM OF INSTRUCTION

Distance education institutions rely on a mixture of appropriate communications technology. However, emphasis on the various technologies differs from institution to institution. There are a number of philosophies and circumstances to be considered when selecting the principal media of instruction.

PRINT

The British Open University set a high standard in the production of printed course units by course teams. Whereas television and radio broadcasting are used as a pace-setter and motivator of learning and tutorial services as well as summer schools are provided in order to identify the students with the University, the studies at the British Open University are conducted on the basis of interactive learning through its printed course units.

This model is followed by most distance education institutions thorughout the world. Its innovative course team approach in the production system has greatly influenced such institutions as Sukhothai Thammathirat Open University in Thailand, Allama Iqbal Open University of Pakistan and many others.

Its effectiveness in the instructional process is augmented by the excellent postal system, public library services and, above all, by the British habit of writing and reading. In Japan also college correspondence courses rely on textbooks and correspondence instruction as principal media of instruction.

BROADCASTING

In Japan however, a system based on the use of television and radio broadcasting as principal media of instruction developed with the inauguration of the University of the Air. Behind this emphasis lies the fact that almost all elementary schools already employ instructional television broadcasts by NHK, the Japanese National Public Broadcasting Service.

NHK began radio school programs in April 1935. The then Minister of Education defined the purpose as supplementing and enriching school education, not replacing it. Televisions school programs were created by NHK almost simultaneously with the beginning of television broadcasting and, since October 1951, television school programs have been produced and broadcast. Science, social studies and ethics are the most popular programs.

Programs are broadcast weekly for each different grade level and are 15 minutes long. Yearly programming schedules are issued before the beginning of the school year so that teachers can use them in developing lesson plans. Each trimester, NHK publishes a teacher's guide for each grade level. These guides contain detailed descriptions of each scheduled program and provide notes concerning their use in the classroom. The programs are easily incorporated into the teaching schedule because the classroom as well as the media curriculum is based upon the course of study set by the Ministry of Education.

In the late 60's and 70's the use of inexpensive video tape recorders spread widely in Japan's schools and the style of using academic television programs changed substantially. In addition to elementary school use the use of school television programs at junior and senior high schools increased very rapidly, owing to the fact that recording devices solved the problem of scheduling the class hours and the broadcasting time. Furthermore, many teachers began to edit the recorded programs to fit their own teaching plans and more and more teachers started using edited portions as support materials in their teaching.

A 1986 survey of the students of the University of the Air revealed that about 70% of the students own video tape recorders at home, that practically 100% own audio cassettes and that practically all those who possess the instruments record lectures automatically and replay them at convenient times.

When computers are used as tools of education the new functions are labelled "computer assisted instruction" (CAI) and "computer managed instruction" (CMI). Extensive use of CAI has been reported in Great Britain where evidence confirms that CAI is becoming more widespread in higher education. It is extensively used in the British Open University where they see CAI as offering great long-term educational potential because of its interactive ability with individual students, its capacity for patient, instant feedback, its simulation potential and its communication and database capability which enables students to access information quickly.

An American CAI system developed by Control Data Corporation in conjunction with the University of Illinois and called PLATO, exerted extensive, international influence. A number of countries, including Belgium, Luxembourg, Sweden, Finland as well as the Netherlands and Japan, have experimented with this sytem. PLATO continues to be used as a CAI system at a number of American colleges and universities. In Japan it is extensively used in the national technical colleges and private professional colleges. In particular at a private technological institute, complete paper questions and library services have been replaced by computer system. This Kanazawa Institute of Technology developed mathematics and English CAI software relevant to the different levels of the students and let them work individually at the institute's computer laboratory so that all of them may reach a certain standard before the end of the summer vacation.

CMI, on the other hand, can accomplish a great deal without requiring computer access by the student. CMI, to differing degrees, is utilized at most distance learning institutions. At the FernUniversität in Germany and the University of the Air of Japan computers are used to correct and grade students. Similar systems, sometimes interactive, are in operation at the British Open University. In Canada, TV Ontario has a computer managed learning system which was originally developed at Miami-Dade Community College.

Some universities in Japan have computer centres specifically installed for educational utilization. Last year the Ministry of Education set guidelines for the introduction of computers into secondary schools and began providing schools with funds to purchase microcomputers for use by students. The teaching of computer utilization skills to non-specialists is becoming increasingly popular.

In the United States, a number of colleges and universities have gone as far as requiring all their entering students, regardless of field of study, to purchase microcomputers. The expectation at these schools, which are mostly private universities, is that the students will use microcomputers for at least part of their work in all subjects.

Computer language, born from numerals, and bred by English, is now facing a new challenge from the Japanese and the Chinese. An automatic translation system among several Asian languages is now being developed under the auspices of the Ministry of International Trade and Industry of Japan. A function to allow the input of information by voice is almost complete. When these technological developments reach the level of practical application international distance education will have been given a new horizon.

COMMUNICATION SATELLITE

New information technologies are used extensively in American colleges and universities to deliver professional continuing education. Their use in such programs as applied health, medicine, engineering and high technology, business, education, law and real estate is most commonly observed. Particularly noteworthy is the linkage of engineering graduate schools with corporate learning sites via communication satellite organized by the Colorado-based National Technological University. A similar arrangement is now being developed in Europe through the PACE program.

Corporations in Japan have developed extensive corporate training systems at high education level. Particularly in the advanced fields of technology corporations are faced with the problem of how to allow their responsible engineers to leave their work site in order to be trained. To help alleviate the problem KDD (International Telephone and Telegraph). NEC (Japan, Electronics Corporation) and several other companies are applying distance education in the form of teleconferencing systems through communications satellite. These systems employ computers, slow scan television, electronic board, speaker phones, facsimile and other electronic devices to make distance education effective.

In an extraordinary period of rapid technological development and change, these corporations are eager to modernize their operating systems, train new professionals and technicians and vitalize their economic situation.

POSTSCRIPT

Does the medium change the message? How does the content of a course offered via televisions, for example, differ from the same course offered in a standard classroom setting — if in fact it differs at all? It can be expected that, as the new technology is introduced into the learning environment, course content will be in some way changed or modified.

Educators, when addressed with this question, may respond that "it does not or should not make any difference". Even in instances where instructors believe the medium does affect the message, they find it difficult to specify in what ways the curriculum changes. The medium may not necessarily affect the message for, generally, the same information is transmitted regardless of medium.

The ability of a computer-based communication network to provide immediate and comprehensive access to a broad range of information and to offer a broad data base for both students and faculty however, is already having widespread impact on higher education. Just as automobiles and aeroplanes expanded humanity's ability to walk on two legs and just as industrial robots increased humankind's power to produce with two hands, the employment of modern electronic communications technology increases our ability to learn through the use of the brain. Distance education, with appropriate use of modern communications technology, will help overcome the hurdles of distance, time and cultural difference for all people who have the will to learn.

BIOGRAPHICAL DETAILS

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Continuing education New needs and challenges for distance studies

URBAN DAHLLÖF

FROM SECONDARY TO CONTINUING EDUCATION

When the organizing committee for this conference asked for a paper on continuing education, this might be seen as a symptom of a need for distance educators to prepare themselves for a shift of emphasis from programs for adults oriented towards a formal competence at the secondary level of schooling or in higher education to a more diversified menu of courses, more or less like the Swedish "smörgåsbord".

In any case, such a shift of emphasis has already taken place in national policies in education, in so far as many of the economically more advanced, and industrialized countries have by now expanded their formal school systems to provide secondary education for the great majority of the population and higher education for a much higher proportion of a birth cohort than was the case only a few years ago.

This is not least the case in the Nordic family of small welfare states on the geographical and cultural fringe of Western civilization. In my own country, Sweden, no more than 5 per cent of the 19 year old cohort matriculated in 1950 from the upper secondary school which corresponds to the requirements for university entrance. After a period of intense expansion, aiming at mobilizing the national reserve of talent as well as increasing the accessibility to secondary education both socially and regionally, that part of the school system in 1980 provided academic or vocational training programs for a total of 80 per cent of a cohort. Of these about 25 per cent had acquired a full competence for university entrance from a three year academic program, while another 25 per cent had a more practically oriented two year program behind them after the compulsory school, requiring them to take supplementary courses of less than one year full time studies in order to gain entry to universities or colleges. Of the rest, for those who have the ability to pursue theoretical studies, university entry competence may require merely a somewhat longer time of study in certain areas. Moreover, a great number of special community adult secondary schools provide these supplementary programs either in the form of evening courses or full day studies.

Under such conditions it is no wonder that such a pioneer institution like the Hermods correspondence institute in Malmö expanded heavily in the 1940s and 1950s, when the social demand for post-compulsory education was rapidly growing but not yet met by the public school system. During this period a limited number of private and/or state supported correspondence institutes played a very strategic role in the provision of secondary education both for youth and adults in sparsely populated areas and for adults in the work-force all over the country.

There is still a role for distance providers to play in the area of secondary education in serving those who live far away from such a school or whose working conditions or family situation do not permitthem to participate in regular evening classes. Of course the expansion of the public school system leads to a shrinking market for the distance providers in this field. Moreover, two specific circumstances do imply a new challenge for the course designers:

(1) In pace with the increased diversification of the program offerings — not least those of a vocational kind — there are a greater number of programs needed to serve a smaller number of students, especially if society aims at providing the remaining target group with the same educational opportunities as the majority of the population.

(2) A great many of this specific target group are at the same time not motivated or otherwise prepared to carry on independent studies on their own as in the days of a great reserve of academic talent.

What steps should be taken to meet this double-challenge? Perhaps somebody now would like to object, that this picture of the situation at the secondary level of schooling is true only for a limited number of highly industrialized countries. That may be the case, at least in quantitative terms. Also within the Western world there are many countries where secondary education has not yet expanded to the same extent, or whose populations are of such a size, that there remains for many years a large market for distance education programs. This may be still more valid for the developing countries, provided that an expansion of the secondary level is a policy matter of high priority. However, that is no longer always the case. Instead, it is now very often recognized that a vocationally oriented, continuing education program for adults in many cases provides the most adequate as well as the most rapid way of promoting the living conditions of the great majority of the population. Yet this may run parallel to a low or moderate expansion of the traditional secondary and tertiary sectors. Nor should we overlook the sometimes great need to carry out literacy programs and to strengthen and prolong primary education in other ways in the developing countries. However, these often overwhelming needs at the primary level usually have to be met by quite specific and context-related strategies of a kind which often combine a central, large-scale production of basic teaching materials with local teaching activities. All in all these mass education programs at the primary level represent a unique case of educational planning which deserves its own treatment and which cannot readily be operated within the frame of reference otherwise given for distance education.

Irrespective of the size of the target groups and in view of the now long tradition both of literacy campaigns in the third world and of distance education at the secondary level, these areas do not any longer represent new needs, calling for new strategies of planning and design. However, it should not be denied that old or even eternal problems may call for a reconsideration of the strategies to tackle them. An example of this is the double crux at the secondary level of a need for a greater variety of courses for smaller groups combined with target groups less motivated for traditional independent studies.

The shift of emphasis from secondary education provision to continuing education has so far been discussed mainly from the point of view of the developing countries. As far as the industrialized nations are concerned the preceding passages might be interpreted to imply that nothing else now remains for distance education than continuing and higher education. Such a passive attitude is, however, not justified. Quite the contrary. There are a number of strong arguments in favour of a new deal in continuing education both with respect to the types of programs offered, their quantity as well as their qualitative design. Before turning to those issues, a few specific words should be mentioned about distance programs in the higher education sector.

HIGHER EDUCATION AND A CONTINUING EDUCATION POLICY

In a way similar to that of secondary education, the systems of higher education have undergone a rapid expansion in most countries during the last 20 years. In this connection it makes no major difference if this has taken place in terms of an integrated system of universities and colleges as in Sweden or in terms of a dual system, often with some coordination of course requirements for entry to graduate studies.

On this occasion there is specific reason to highlight the importance of contextual frame conditions for the organization of the higher education system, including the creation of specific Open Universities such as those in Great Britain, the German Federal Republic, the Netherlands, Spain and Japan to mention only a few well-known examples. On the other hand distance education programs can be organized by many universities and colleges as one alternative among a number of possible adaptations of the traditional delivery mode of a tertiary institution. Such rather smaller scale, decentralized models, less heavily dependent upon the media of the air or large package-systems of teaching materials, are practiced in Australia, New Zealand, several of the Canadian provinces and particularly in Sweden among the Nordic Countries. So in this respect there are good reasons to ask, if there are any specific contextual conditions which characterize the Nordic countries, creating a certain link also with other Western fringe areas like Canada, Australia and

New Zealand but necessitating differences from the situation in the U.K., U.S., Western Germany, France and Italy.

Three sets of factors seem to form a common denominator for this Western fringe area. One has to do with the scale of operations, primarily in terms of population and size of adult target groups. The second factor concerns the geographical distribution of the target groups in relation to already existing centres of higher education. The third factor is concentrated on the university policies of admission as well as adaptation to the demands on program contents and delivery modes by new student groups. In general the Western fringe areas under consideration here seem to share a combination of characteristics of relatively small target groups, particularly among adults and a relatively high accessibility both in terms of admission opportunities and course design and in terms of geographical distances, even though some of these countries, such as Canada and Australia, have among the largest sparsely populated areas in the world.

This does not preclude the fact that there are also quite obvious differences within this Western fringe area between the Nordic countries. Norway and Finland are outstanding in their investment both in universities and in qualified staff such as professors and senior lecturers. Norway has four full universities and Finland has pursued a deliberate long-term regionalization policy, implying the establishment of universities or university colleges with a research organization in at least one faculty area in as many as nine towns.

When the Norwegian district colleges are added, one finds that higher education is offered at a great many more towns in Norway than the four university sites. In this connection it should be stressed that the Norwegian population is very unevenly distributed in clusters, leaving vast sparsely populated areas in the mountain regions between the towns and often with time-consuming connections over narrow, winding mountain roads or infrequent ferry trips across the fjords.

Sweden's population of 8.3 million is twice as great as that of Norway. Yet, there are no more than six full universities and fifteen state university colleges. However, thanks to the flatter landscape and the real possibility of commuting larger distances, the accessibility of higher education is about the same as in Norway, particularly when one considers the systematic use of a strategy for decentralized courses and distance programs, with residential schools or shorter weekend meetings two or three times per semester. Sweden also has a specific set of entry rules for adults through which work experience is given special credit.

The conditions under which higher education operates in Scandinavia are quite similar to those of some of the Australian states and the Canadian provinces. For example, the geographical conditions of British Columbia are very similar to those of Norway and some of the many community colleges, especially North Island College in the coastal region, have adopted a policy of course offerings mainly intended for adults, highly decentralized and deliberately designed to support the development of the region.

When the total enrollment of adults in higher education is considered, it seems justifiable to ask whether the rates of participation are higher in those states and provinces which follow a decentralized, small scale approach to distance education as a supplement to other distribution forms. The establishment of big, central specialized universities, such as the German Fernuniversitat in Hagen and Athabasca University in Alberta, do not seem to have promoted a high adult participation in the area as a whole, in spite of the impressive student numbers for those individual institutions. Perhaps such large, centralized solutions were undertaken primarily in countries where traditional universities were not particularly prepared to open themselves to new student groups or to adjust the pattern of their course offerings to the specific demands of these groups?

In any case Sweden is no doubt among those countries that have taken yet another step towards the inclusion of a policy of continuing education at the university and college level. In contrast to a great number of other countries, it now has an official policy of offering only a part of a full degree program in its own right as a supplement to basic training at the secondary level of education. Consequently, the criterion of completion rates for a full degree can no longer be used as an indicator of the effectiveness of the studies in that part of the system.

This gives us a specific purpose for discussing the reasons behind a more general policy of continuing education and their consequences for the design of distance education programs within such a system of education.

MOTIVES FOR A GREATER EMPHASIS ON CONTINUING EDUCATION

The term continuing education is here used in a wide sense of the word. It denotes those parts of the life-long learning concept that have to be met by any kind of systematic educational program, including both organized study circles and formal programs leading to some specific competence, certified by any type of diploma, certificate or degree.

In this connection it may suffice to distinguish between two main motives for a greater emphasis on continuing education. First, we have a social motive to even out differences in formal and/or real competence due to the social bias in the application and selection procedures in the ordinary school system. In this perspective the main goal for continuing education is to provide adults with a second chance to a vocational, general secondary or higher education competence depending on what level they broke off from their earlier school career. This compensatory philosophy directs particular attention to differences between social classes or strata but also between regions and age groups which are often correlated with social background variables. Even though recent school reforms aim at evening out social and regional differences in the enrollments to post-compulsory education, they are seldom quite successful in doing so. Therefore, a pool of untapped talent will always remain at least to some extent, although its size will decrease with the goal-attainment of the reforms. A specific case may be the aim to bridge the generation gap. It is regarded as a matter of justice that provision should be made for the adult generation of at least some of the educational opportunities which now so generously are offered to the youth, since it is this older generation who through taxes have paid and still are paying the costs for the great expansion of the educational system. However, if that wish to bridge the generation gap was the main social motive, the provision of continuing education opportunities for adults would mean just a temporary expansion for a number of years, until the older generation approached the age of retirement.

The other motive is stronger and so much longer lasting that one is tempted to speak about an eternal need. It is based on the needs for education of all kinds evoked by the changing society with respect to new technologies, structural changes of the economy and other forms of rationalization. But new educational needs do also stem from the social and environmental consequences of new technologies and economic changes as well as from the trends towards more participation by blue and white collar workers and other employees in the decision making processes in the work-place and in municipal boards or working groups, in labour unions and political parties.

FORMS OF CONTINUING EDUCATION

Traditionally two main forms of continuing education are recognized. First of all we have different varieties of non-credit course, sometimes, as so often in the Nordic countries, in the form of a study circle under the auspices of a free educational association, sometimes at a "folkhögskola" or peoples college more or less in the Danish Grundtvig-tradition, sometimes in the form of a formal course, e.g. arranged by a university department of continuing education. The organization depends upon the national, cultural context and its traditions. There are no formal entry requirements and there are seldom any direct links to original research. Sometimes the label of "consumer-oriented" studies are applied to this category of continuing general education, even though there are both arguments and some evidence that the participation cannot that easily be distinguished from more investment oriented, competence-related studies.

The other category thus aims at developing a specific competence related to the demands of the working life. In contrast to the characteristics of a general education program, which often implies an orientation in a field, the main emphasis is here on operational skills for which the individual, after the training, can take responsibility, although he or she in some way is under somebody's supervision. This well-known category embraces

- upgrading courses, often of an inservice training type
- further education courses within the participant's ordinary field of work
- retraining courses for new job requirements in another occupation at the same level of responsibility
- programs leading to a higher competence in the same or in a new occupation.

The rapidly changing world of work has made this type of continuing education a very frequent one. It is often stressed that, in the future, everybody has to be prepared to change occupational status several times during a life-time. This is also the basic idea behind the term "recurrent education" as an expression of a deliberate policy to distribute formal educational opportunities more evenly over the life-span and to launch financial schemes in order to promote adult participation. In any case it means that the old "ruck-sack model" no longer works. School can no longer be expected to provide the school leaver with all the intellectual food needed for the rest of the journey through life.

In this field there are immense demands to be filled for which distance education has a definite role to play. And here we should recall what was said earlier about full degrees. There is no valid argument that higher education always has to mean a full degree also for adults. Instead, they may be better served by getting a higher education credit course in just one or two specialist areas, perhaps combined with quite different subjects, depending on their basic level of training, their specific work situation and their own motivation and career plans. Continuing education for adults in a position of responsibility in working life does also provide an excellent opportunity for the research community to disseminate their findings and ways of thinking directly to key target groups which often are in a position to influence the working patterns and to pave the way for new technologies or administrative routines.

Thus, an active participation by researchers may be in their own interest and also promote speeding up the research dissemination process.

Finally, a third variety of continuing education should perhaps be added to the two traditional ones mentioned above. This "third alternative" seems to correspond to the demands for a more profound knowledge base by those who in different capacities cooperate closely with highly specialized professionals and by those who in various advisory or decision making bodies have to take a stand and even cast a vote on complicated new schemes affecting the economy, the environment, the working conditions and the life quality in the local community or in society at large. The required competence does not need operational skills but a deeper understanding of implications and consequences than usually are connected with the outcomes of study circle activities and other forms of general education. The targets outlined here may often require a direct link with the research front and imply intellectual processes of evaluation and synthesis, assessing probabilities against each other at a quite high taxonomical level of cognitive educational goals.

CONSEQUENCES FOR THE DESIGN OF DISTANCE EDUCATION PROGRAMS

Finally, we should consider the consequences of the new continuing education needs, outlined above, for the design of distance education programs. In this connection it may suffice just to emphasize a few crucial points as some food for further thoughts and to prompt further thinking. Consequently this summary of the main contents of my presentation will deliberately end up with the following open questions:

(1) What steps would be taken within distance education to promote the use of the adult students' own experience as a resource in the teaching and learning situation?

(2) How can distance education programs be adapted to the rapidly changing research front in many key areas which is necessary for the deep-understanding of the third variety of continuing education mentioned above?

(3) How can one better provide for an individualized feed-back to adult students who, depending on their different starting points and varying experiences, face difficulties at very different points in a study program, which cannot always be foreseen?

(4) How can we promote a necessary professionalism among distance educators not only to write teaching materials and study guides but to evaluate, plan and design distance education programs in a way that best suits the interests of the different target groups?

(5) How can we best promote research on distance education as part of a program aiming at a deeper professionalization of the field as outlined above?

BIOGRAPHICAL DETAILS

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Distance education and national development

JOHN S. DANIEL

DISTANCE EDUCATION AMONG THE NATIONS: A WORLD TOUR

Distance education continues to grow and evolve in a marvelously diverse fashion around the world. The diversity reflects differences in political philosophy between countries, the availability of new methods of communication, world economic turbulence and, in a few cases, the impact of particular individuals. The following vignettes attempt to capture the salient features of distance education (DE) in various countries and regions. The coverage is somewhat biased toward postsecondary education and we emphasize how distance methods have been harnessed to the national ambitions of different countries in conformity with their prevailing politico-economic values.

THE SOVIET BLOC

The right to distance education forms part of the constitution of the USSR (Article 45);

"Citizens of the USSR have the right to education. This right is ensured by free provision of all forms of education... by the development of distance and part-time education courses... by the provision of facilities for self-education."

The objectives of DE in the USSR are closely tied to the efficient training of skilled manpower. Ilyin (1983) justifies the role of HDE in the USSR in four points:

- better training of specialists by the combination of studies and work;
- DE costs two or three times less than full-time education;
- the work/DE combination prevents students from switching professions after training — which 15–20% of conventional graduates do;
- conventional graduates need two-three years of work before mastering their skills.

The clientele for postsecondary DE in the USSR is huge, involving some 1.5 m students or 30% of all students in institutions of higher learning(Ilyin 1983). Entrance is on the basis of competitive examinations. There are 14 specialized distance teaching universities (DTUs) and 800 distance subsidiaries and branches of full-time universities and institutes offering a complete range of programmes. The technology of Soviet DE involves correspondence courses (study guides and text books) and some television on a national educational channel. Its distinguishing feature is the 30% of study carried out in face-to-face settings, sometimes called the "consultation model". Soviet DTUs operate branches across the nation (e.g. 23 branches for the USSR Financial and Economic Institute for Distance Education which has 32,000 students). Students are given paid leave from work to keep up with their courses and attend lectures and practical work at these branches.

The countries of the Soviet bloc are pleased with the results of this model of DE and seek to improve each element of the system. Mohle (1983) talks about better integration of independent work into the educational process. He repeatedly stresses the goal of training "creative personalities" who will take "personal responsibility". He advocates however, the teaching of "clearly established positions" so creativity may not extend very far into the DE curriculum itself. Holmberg and Keegan (1984) note that reliance on marxist-leninist thinking as the framework for teaching and research is repeatedly stressed by distance educators from the Soviet bloc. It is too early to know what impact the emphasis on openness (glasnost) introduced by Mr. Gorbachev will have on distance education. An article by Jedrzycki (1984) on the proposed open university in Poland is evidence of the hopes that exist.

ASIA

The most exciting development in distance education in the 1980s have occurred in the Far East. Faced with the common need to expand higher education countries have used distance education in ways that reflect their varied educational and political traditions.

CHINA

China, home to one quarter of humanity, is expanding the provision of distance education rapidly. The objective is to meet the needs of the development of the national economy and of society (Jianshu 1987) as part of the modernization of education. While the rationale behind DE in China and the USSR is similar, the Soviet emphasis is on improving a well-established educational system whereas DE in China is part of a massive catch-up operation In 1983 only 0.6% of the population were university graduates while 23.5% were semi-literate or illiterate. In relation to statistics like these, the numbers now involved in DE in China, impressive though they are in absolute terms, represent only a modest beginning. But there is no lack of idealism. Staff are urged to gain "a deeper understanding of higher correspondence education in the cause of socialist economic construction, to get them to dedicate their lives to the development of higher correspondence education in China" (Jianshu 1987). The aim is to provide DE to 20m Chinese over the next 15 years.

In 1983 around 1,000,000 Chinese, or some 40% of the country's university population, were studying at a distance. One third of this clientele was enrolled in the correspondence programmes that are offered by 311 of China's 800 colleges and universities; one third was associated with the Radio and Television University of China (RTVU) — a decentralized system of institutions; the final third was associated with the local TV universities which, since 1978, have "sprung up like bamboo shoots after a spring rain in China" (Yu Xu 1986).

As in the USSR, entry to DE in China is by selection and there are close links with the workplace. Jianshu (1987) reports on the unified entrance exam introduced in 1986 and taken by 1.3 m people. Many students at the RTVU branches are workers released full-time with pay. They watch the TV programmes in groups at the branches where they also have contact with part-time tutors. Although the TV universities are not "open" universities, the Chinese hope that the vast classroom without walls which they represent will, as a side effect, raise the educational ambitions in the population at large.

The programmes offered by correspondence in China cover a wide range of topics and lead to the same diplomas as on-campus study. The choice of courses from the TV universities is narrower but now expanding outside the original offerings of science and technology. A satellite TV teacher's college opened in 1986 (Jianshu 1987).

The technology of correspondence teaching in China parallels that used in the USSR. Face-to-face contact accounts for about 30% of the total time that the student devotes to the five components of each course; independent study; lectures; submission of assignments; tests; examination and thesis. Because of the importance attached to staff-student contact the staffing ratios, at one full-time academic per 25–40 students, are high compared to systems based purely on independent study.

China is pleased with the results of its DE and seeks to expand provision. Strong emphasis is placed on the quality of management as the determinant of future success. This is the major motivation behind cooperative projects with other countries. It is proposed (Jianshu 1987) that all institutions offering correspondence courses should have a vice-president for correspondence education. In the TV universities there is awareness of the need to improve text materials and their links with the TV programmes. The independent thinking required by the present TV university format is seen as an advantage, however, in a country now trying to break a tradition of rote learning in its educational system. The new Chinese policy of encouraging personal initiative will likely give DE an even better image. Some institutions, such as the Shanghai TV University, would like to put greater emphasis on part-time learners and short-cycle programmes if the current emphasis on full-time students can be reduced.

TAIWAN

Taiwanese experience presents a fascinating contrast to DE on the mainland. Chen (1988) reports that because of the traditional Confucian emphasis on the teacher as role model in a face-to-face setting, the National Open University of Taiwan cannot award degrees, even though its curriculum and examination standards are identical to those in conventional universities.

THAILAND

Thailand has created the most widely admired DE institution after the U.K. Open University. Sukhothai Thammathirat Open University (STOU) was founded in 1978 and admitted its first students in 1980. As Carr (1984) notes: "its presentation of such varied programmes so quickly is impressive by any standards". For its objectives STOU "holds to the principle of lifelong education, aims at improving the quality of life for the general public, seeks to increase the educational qualifications of working people, and strives to expand educational opportunities for secondary school graduates in response to the needs of individuals and society" (Srisa-an 1984). The University is also charged with preserving and developing national culture and has already made a significant contribution in this area by increasing the quality and variety of books in the Thai language.

The clientele of STOU consisted of some 200,000 students in 1983 and is expanding to a target of 0.5 m by 1990. Students have either, (i) 12 years of schooling, (ii) 10 years of schooling plus 5 years work experience, or (iii) a degree or diploma. Most students are in the 26–30 age group and government employees are much the largest occupational group. Males slightly outnumber females and the regional distribution of students is close to that of the population at large.

STOU's programmes focus on professional and vocational training in education, management, science, law, economics, health science, home economis, agricultural extension, cooperation, politics and communication arts. There are also extensive professional development programmes with bodies such as the national police department. The target is 400 courses, 100 of which were available in 1983. Delivery technology is based on quality correspondence texts with audio-cassettes, radio and TV broadcast "unopposed" in prime time on the national channel. State-of-the-art TV facilities are part of STOU's new campus north of Bangkok. The campus also includes residence accommodation since all students must attend 4–5 day intensive workshops during their studies.

The results of the first years of STOU's experience are impressive. A large enterprise that is well integrated with the existing educational infrastructure has been built up quickly. Drop-out rates are modest at around 25% and the pass rates of 80% are high. Perhaps the most encouraging fact of all is that STOU can foresee the time when student fees alone will cover the operating budget and government support will not be necessary. Just as the success of the U.K. Open University owed much to the leadership of its founding head, Walter Pery, so STOU's success reflects the dedication and brilliant administration of its founder, Wichit Srisa-an. His appointment to a senior government post in 1987 deprived distance education of one of its world leaders.

VIET NAM

Viet Nam has awarded 50,000 degreas by distance education since 1960. The focus now is on the in-service training of workers, 30,000 of whom are enrolled in distance courses offered by 30 conventional institutions. The combination of correspondence tuition and face-to-face contact in local centres recalls the Soviet distance education model. The most pressing problem for DE in Viet Nam is shortages of paper and equipment (Unesco 1983).

JAPAN

Japan kept the world waiting for 16 years, from 1969 to 1985, while it planned and designed its University of the Air. Separate from the existing correspondence provision of Japanese universities, this new institution was established in 1985 to offer liberal arts programmes in domestic science, industrial and social sciences, and cultural and natural sciences. These are 4-year programmes aimed at both adult students and high school graduates. The students' weekly commitment of approximately ten hours is divided between TV (3 hrs), written materials (4–5 hours) and attendance at study centres (3 hrs). (Yabe 1983)

SOUTH KOREA

South Korea set up a correspondence college within Seoul National University in 1972 to provide a 2-year programme to those who failed the national university entrance examination. Despite a drop-out rate of 70% it was highly cost-effective and its graduates had a very high success rate in entry to the upper years of conventional university programmes. This college became the Korea Correspondence University in 1982 and now enrolls some 250,000 students in 5-year programmes in 13 subject areas. Admission is by lottery among high shool graduates. The instructional strategy includes printed materials, assignments, radio programmes, a student newspaper, and two weeks of lectures per year at local centres associated with conventional universities (Kim 1983).

HONG KONG

In relation to its population the capacity of the universities, colleges and polytechnics in Hong Kong is small. For this reason it is the country with the highest number of its citizens studying overseas (50,000+). Legislation formerly prevented the emergence of local DE providers to satisfy the high demand for university study.

The largest provider of DE in Hong Kong is the Open College of the University of East Asia. This college is the most interesting collaborative venture in distance education in the world. According to Swift (1986): "Our college is unashamedly parasitical. We offer English language degrees using almost entirely imported courses. We teach them in the same way and at the same level as in the originating institution and we examine them at the same level by using external examiners (and often the examinations) from that institution."

Planning for the college began in 1981, students were enrolled in 1982 and the first graduates appeared in 1986. The college already breaks even on student fees alone (HK$40,000 for a 3-year degree) at an enrolment of 1000 full-time equivalent students. As enrollments increase and the college benefits from economies of scale its performance will improve even further . Already in the 5 years of its existence withdrawal rates have decreased sharply while pass rates have increased.

Swift's account of the strategy of the Open College is required reading for anyone interested in international cooperation in distance education. He addresses such issues as contract negotiation with other institutions the possibility of cultural imperialism, governmental hostility to distance education, and the opportunities for cloning the open college concept.

INDIA

Faced with a huge unsatisfied demand for higher education and alleged corruption in its external examination system (A "challenge" examination arrangement), India turned to DE with the creation of the correspondence institute of the University of Delhi in 1962. Although the original intent was to create only one such institute per state and to limit enrolment in each to 10,000 they proliferated to the extent that 20% of India's 133 universities now have correspondence institutes. Paul (1983) describes one such institute and Datt (1982) gives a profile of Indian correspondence students. The results of this move to DE disappointed the Indian authorities. The clientele is only 115,000, programmes are mostly limited to arts and commerce and the technology used rarely goes beyond printed materials of inferior quality with occasional use of radio and study centres.

Reddy (1984) lists the reasons why the correspondence institutes do not enjoy high credibility and describes the latest developments in DE in India. These are the creation of stand-alone open universities intended to bring to Indian DE the seriousness of purpose and professional competence that is lacking in the correspondence institutes. Carr (1983) describes the background to the establishment of the Andhra Pradesh Open University in 1982 and Singh (1985) reports on the creation of the Indira Gandhi National Open University (IGNOU) in 1985. This will be the keystone of a national system of Indian open universities. Furthermore the legislation creating IGNOU also gives it a coordinating role for DE throughout India. This signals the determination of Indian governments to use DE more effectively.

PAKISTAN

Pakistan has concentrated its investment in DE in the Allama Iqbal Open University (AIOU), created in 1974 as "a People's Open University... to provide part-time educational facilities through correspondence courses, tutorials, seminars, workshops, laboratories, television and radio broadcasts and other mass communications media". AIOU's clientele is defined as "the masses" and degree work is intended to be only a small part of its programming. In 1983 about half the 65,000 students were enrolled in degree courses. There is a strong emphasis on teacher education and some 60,000 teachers out of a potential market of 160,000 had taken the AIOU primary teachers orientation course by 1982. The other main focus has been general education at the junior college level (Fleming 1982). The technology used by AIOU consists of printed books together with radio and television broadcasts. Tutorial support in some 150 study centres is given for certificate courses.

After a rapid start and promising early results AIOU is experiencing some financial difficulties and suffering from the shortcomings of the country's communications infrastructure. The acquisition of its own printing press was an important step in reducing delays in the delivery of materials to students (Unesco 1983).

THE SOUTH PACIFIC AND AUSTRALASIA

THE PACIFIC ISLANDS

In this region one talsk not of the number of universities in the country, but of the number of countries in the university. From its main campus in Fiji the University of the South Pacific (USP) services eleven countries: Cook Islands, Fiji, Kiribati, Nauru, Nieu, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu and Western Samoa. DE is a *sine qua non* for serving such a territory. Gillard and Williams (1986) describe how USP has risen to the challenge of serving this diverse student body distributed over an area of ocean the size of Australia. The technology is essentially based on printed study material but interesting use has been made of satellite tutorials. Although only 5% of students actually used this service, which was limited to a total of 300 hours per year, the existence of this possibility of dialogue is believed to be psychologically important. The satellite used (AST-1) having ceased service, USP is seeking time on other satellites.

NEW ZEALAND

New Zealand has a long tradition of distance education since its population is dispersed throughout two islands where travel is slow because of mountainous terrain. There is one major provider of distance education at each level: the Correspondence School for elementary and secondary students; the Technical Correspondence Institute for postsecondary technical education; and Massey University for university level work. More recently Massey's work has been complemented by an initiative of the University of Otago in Dunedin which has set up a national teleconference network that will be used for programmes in dentistry, humanities, social work, wildlife management and continuing medical education.

AUSTRALIA

If the organization of DE in New Zealand is simple and logical a sharp contrast is to be found in neighboring Australia which is a federal state. Appropriately enough the latest book on postsecondary DE in Australia is entitled *Diversity Down Under* (ASPESA 1985). White (1982) traces the history of DE in Australia, Mitchell (1986) gives the example of one state and Gough (1983) highlights the problem of proliferation of institutions providing DE.

The objectives of Australian DE have evolved from "access" to "equivalence" and "excellence" in recent years according to Gough (ASPESA 1985). The Australian government sees the provision of DE as important because of the trend to life-long recurrent education, an ageing population, the increasing expectations of women, and a more competitive labour market. Australia is proud of its "dual mode" tradition whereby the same faculty teach conventional and distance students. The results of the Australian experience are a vibrant DE sector which, perhaps because of its diversity and competitiveness, has contributed much to the international DE literature. The lack of coordination among providers is the problem most frequently identified.

AFRICA

No continent has a greater need for distance education than Africa (Ansere 1982) but nowhere is there a greater gap between need and supply. Apart from the University of South Africa, which has expanded to 60,000 students (of which 13,000 Blacks) since it began as the world's first open university in 1947 (Van As 1985), provision of DE in Africa has lacked resources and continuity. A striking example of shattered hopes was the Open University of Nigeria which was closed down for economic reasons almost as soon as it began (Omolewa 1984, Oduaran 1985). Tanzania is another striking example of a country where education and DE are claimed to be central to national development but have languished because national development has not generated the economic resources to do much. Although development policies are changing, Reuben still calls education "a state ideological institution" and describes Tanzanian DE against the background of Nyerere socialism.

The greatest need for distance education in Africa is at the secondary and technical/vocational levels, a need which universities have been helping to meet (e.g. in Kenya see Gitau 1984, 1986). Zambia offers university level correspondence courses with some radio to 600 students (Siaciwena 1984) but teacher education and upgrading have been the nearest thing to university-level work attempted on any scale in most African countries. Gitau (1986) describes Kenya's programmes for teachers and their cost-effectiveness has been assessed positively by the World Bank (Hawkridge 1982). Holmberg (1985) notes how these efforts suffer from "a constant lack of material resources and funds" with "new activities virtually smothering older ones" all too often.

On the positive side, however, a significant cadre of distance education workers have been trained in Africa in recent years and 29 African agencies active in distance education at some level responded to a recent survey conducted for the Commonwealth Secretariat (IEC/CET 1987). With more resources and some international help DE could grow significantly in Africa in the years ahead. As in Zambia (Siaciwena, 1988) a key goal of national development in Africa is to reduce rural/urban disparities and inculcate useful skills.

LATIN AMERICA

DE in Latin America presents a fascinating study. Nowhere is the enthusiasm for distance education greater. New projects, such as the Columbia open and distance education system are described with missionary fervour and an abundance of organizational and planning charts (Gomez 1984).

The Associacion Iberoamericana de Educacion Superior a Distancia publishes a bulletin that reports on developments in a number of countries. These have included operations within conventional universities such as the Universidad Abierta of UNAM in Mexico, the Universidad de Antioquia and the Universidad Javeriana in Columbia, and the Centro de Teleducacion of the Universidad Catolica of Lima, Peru. Anderson (1982) suggests that some 50 Latin American universities have made serious attempts to offer distance education but that "like grassfires on the savannahs" most of these initiatives have been short lived.

Two universities designed solely for DE, Venezuela's Universidad Nacional Abierta (UNA) and Costa Rica's Universidad Estatal de Educacion a Distancia (UNED) have been described in detail by Yepez (1984) and Trejos (1984). Rumble (1982, 1985) has written about the evolution of both institutions. He finds that Latin American DE initiatives suffer from *proyectismo,* "the elaboration of ambitious plans out of all proportion to the resources available to implement them". Furthermore, there are often unrealistic expectations that the introduction of the technology of distance education will then remove undesirable features of the existing system. In the words of Tedesco (1983):

"There is... a frequently encountered fallacy in literature on the subject that attributes the antidemocratic, rigid and traditionalist characteristics of the formal education system to its technical aspects; it is thereupon assumed that by changing the technology, these characteristics can be eliminated. This kind of technocraticutopia has been rapidly refuted by the facts, and it is becoming increasingly clear that there is no reason to suppose that the objectives that the traditional system fails to achieve could be attained using new educational practices, if the variables which define the social context remain unchanged."

Rumble concludes that the locus of DE development in Latin America may move to the private universities since they do not have the organizational traditions, political ebullience and lack of funds that have hampered developments in the public universities.

ARAB STATES

For various reasons DE has come fairly late to the Arab world. The creation of al-Quds University in Jordan is an example of the use of DE to try to change national characteristics judged inimical to national development, such as a preoccupation with paper qualifications and a disdain for technical skills (Walid, 1988).

NORTH AMERICA

North America is dominated by two federal countries, Canada and the USA. Their national governments have little jurisdiction in educational matters and in neither case have they played any role in the development of DE. This is almost as true of the provincial and state governments, which do have authority in educational matters but have usually left DE initiatives to existing institutions. Exceptions are British Columbia, which set up the Open Learning Institute and the Knowledge Network, and more recently Ontario, which has established a Northern Ontario Distance Education Access Network. Against this background the distinguishing feature of DE i North America is its very diversity. Institutional free enterprise has given rise to hundreds of programmes serving an array of objectives and using various technologies. For the USA Markowitz (1983) reports 70 universities offering college-level credit courses to some 150,000 students. His survey shows that the typical programme is located at a Mid-western university, had 2,055 college-level correspondence enrollments in 1981–1982 and had a full-time staff of seven and a half persons with all faculty teaching on an overload basis.

Canada also has a number of conventional universities that offer correspondence courses, for example Waterloo which has the largest English-language programme (300 courses, 20,000 students) and Laurentian which offers courses in both languages. Recent focus has been service to minority groups. Like Australia, Canada has generated a literature of distance education that is disproportionate to its size. Recent books in English (Mugridge and Kaufman 1986) and French (Henri and Kaye 1985) are good examples. English-Canadians agonize over the use of electronic communications in distance education, French-Canadians, who mourn the loss of a somewhat idealized teacher-student relationship, stress the importance of *l'encadrement.*

EUROPE

Distance education is a century-old tradition in several European countries. For example Sweden has known distance education for 150 years (Baath and Willen 1984) and it became a major component of the educational system after the establishment of Hermods in 1898. By the mid 1960s the proportion of Swedes learning at a distance may have been the largest in the world and correspondence education had high credibility. However, by the mid 1970s correspondence education was in decline in Sweden because the state began providing increased opportunities for face-to-face adult education.

Norway shows a contrast between the blossoming of non-university distance education — extensively reported in the literature — and the paucity of reports on postsecondary DE. Here, as in Finland where some 4,000 are involved in postsecondary DE (Hawkridge 1984) existing universities are now cooperating to provide distance education courses in a range of subjects using print and audio technology with some broadcasting.

Conventional universities have also been responsible for postsecondary DE in France where Centres de tele-enseignement Universitaire in 18 universities offer courses to some 20,000 students (Lefranc, 1985). Other European countries, notably Britain, West Germany, Spain and, most recently, Holland, have opted to provide postsecondary DE by creating special institutions. The creation of the UK Open

University (UKOU) attracted worldwide attention and its success has been extensively reported (for a brief summary see Harry, 1982). The objectives of the UKOU are to be open as to people, geographical location, methods and ideas. It now enrolls some 80,000 students in undergraduate and associate courses using a rich multi-media teaching system that includes, in addition to its basis of correspondence texts, TV and radio broadcasting, experimental kits, telephone tutorials and a network of local study centres. In contrast to the highly organized and centralized structure of the UKOU has been the Open Tech (Tolley, 1983; Freeman, 1986) a complex venture involving the provision of 7,000 open learning packages by 300 producers through over 150 college centres. The growth of the Open Tech has been especially interesting in view of the comment by Perry (1976) the founder of the UKOU, that although the greatest need for distance education in Britain might well have been at the pre-university level when the UKOU was set up, an open university had to be created first in order to establish the credibility of distance teaching systems.

In West Germany a strong tradition of pre-university correspondence teaching had little impact on higher education until the creation of 1966 of DIFF (Rebel, 1983) which develops in-service courses that are offered to teachers through cooperating institutions. In 1974 the state of North-Rhine Westphalia created the Fernuniversitat (Bartels, 1984, 1985; Keegan 1982) to relieve pressure on existing universities. Israel created Everyman's University in 1976. It now enrolls about 10,000 students in 115 courses (Shatzman, 1984) and has been judged a cost effective contribution to the country's system of higher education (Melmed et al. 1982).

Legislation to create a national distance education university (UNED) was passed in Spain in 1970. Later legislation aimed at decentralizing the administration of conventional Spanish universities has now left UNED in the advantageous position of being the only national university (Popa-Lisseanu, 1985). It enrolls some 90,000 students (average age around 30) and its graduates have high credibility with employers. Finally, the Open University of Holland began operations in 1984 (van Eesteren-Smith, 1984; van Enckevort, 1985).

CONCLUSION

This country by country analysis reveals that the general literature of DE gives a misleading impression of the purposes to which DE is put and the methods it uses in the advancement of humankind. Two examples will suffice. Firstly, a common belief if that DE is primarily an open learning experience for part-time adults, aged 25 or over. The review shows that most postsecondary DE students are aged 18–24, must pass an admission examination, and are enrolled full-time. Adding together the postsecondary student enrollments listed in our country-by-country survey gives a total of nearly 4 m. The USSR, China, South Korea and Thailand, where the conditions listed above generally obtain, account for three-quarters of the total.

Secondly, DE for this majority consists of fairly simple media: correspondence texts, broadcast television and tutorial meetings. The literature creates the false impression that interactive telecommunications are now a major part of distance education methods. What this tells us, of course, is that there are two worlds of distance education, one focussed on school leavers, the other on adults. Interestingly the two reproduce what the OECD has found to be the two best eductional predictors of national economic prosperity, namely 1) the proportion of youths staying in full-time education beyond the school leaving age and, 2) the proportion of 20–30 year olds returning to postsecondary education while working.

Naturally, countries that have long been industrialized have extensive provision for youths to continue full-time college and university education in networks of conventional institutions. For these countries the focus of DE is on the lifelong education of working adults. Since these countries are richer, they can use fancier technology and take time to write articles and books about what they are doing.

For the countries in the throes of industrialization the focus is on the postsecondary education of young people. Their DE programmes are aimed at mass audiences and use mass technologies like printing and broadcasting that are characteristic of the industrial era.

Besides these two worlds there is a third, where DE must be used to augment and expand the provision of primary and secondary education. In this world postsecondary education at any age is still a luxury.

In the second world of DE, where industrial methods are used to reach large numbers of people, DE is also a vehicle for national cultural and linguistic development. As major producers of print materials these institutions have a special role in maintaining and enhancing local languages. This is notably the case in Thailand, India and Korea. The same phenomenon can be observed in parts of the first world of DE, such as French-Canada, Israel and Holland (with Flemish-Belgium). The advanced countries also use DE to reach particular groups in order to achieve certain national goals. The Canadian province of Ontario has created a DE network in its vast Northern region to help equalize opportunity there. Many countries have used DE for upgrading school teachers in new curricula and methods. In the UK special DE projects have included increasing parents' knowledge of the development of young chil dren and teaching manufacturers about applications of the microprocessor.

These examples reveal the most important strengths of DE as a technique in the service of national development. They are its flexibility, rapidity of execution and scale of impact. Furthermore, DE systems tend, much more than conventional educational institutions, to be self-improving systems which evaluate their effectiveness and make revisions as a matter of course. There are, however, limits to the role of distance education in national development. DE cannot, of itself, change the values and habits of a nation in a short period. It is a evolutionary, not a revolutionary approach to education.

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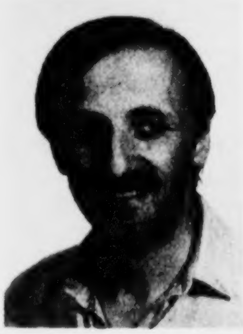

Distance education – a developing concept

JACK FOKS

INTRODUCTION

Distance education is a concept which has developed itself out of existence.

But it certaily proved useful while it lasted. A lot of people have made their reputations because of it, and have been able to meet in various parts of the world to discuss it. More importantly it has led to action by which students have benefitted.

In this paper I will look at some of the ways in which development has taken place and will propose that the accumulative effect is that distance education is no longer useful as a concept. In doing so, I will touch on the developments in the approaches taken:

- to the preparation of study materials;
- to student support;
- to the use of technologies, looking in particular at the different effects on poor and rich countries;
- by government towards education in general and distance education in particular;
- to the privatization of education;
- to the question of distance education as a separate philosophy.

STUDY MATERIALS

Materials have developed from being just duplications of lecture notes, through to being study materials in their own right, based on highly developed principles of instructional design. Notes reproduced on spirit duplicators have been replaced by high quality print productions with impressive levels of surface design. And now print is being complemented by, combined with, or replaced by a whole range of alternative media and technologies which will be looked at further in section 4 which follows.

Distance education programs and associated study materials were originally planned designed and developed by a teacher or lecturer identified by his/her superior as having spare time up his/her sleeve or having suffered a nervous breakdown, or being pregnant, or not safe to let loose on the students. Now development is carried out by teams of professionals, each with something to contribute to the process — content expertise, instructional design, sub-editing, media selection and application and technological prowess.

STUDENT SUPPORT

Students have changed. They are more sophisticated and expect more. They have access to more resources (even in developing countries radio and television are reaching more people).

There continue to be those who learn at a distance because they have no choice but there are many others who prefer to do so. This preference may reflect many things, including greater compatibility with life style; greater personal control over time, place, pace and manner of learning; a way of avoiding a return to the sort of institution with which there are too many unhappy associated memories.

Students interact more with each other. And there are far greater variations in the ages, gender and social backgrounds of distance education students.

Student support systems have developed in many different ways. The general trend has been to increase the level and sophistication of support.

Pre-enrolment counselling is now often more than the provision of basic information on what courses are available; assistance in interpreting course information can lead to more involved and sensitive interaction between intending students and a distance education institution. Cross-institutional referral services add to the enrolment support.

Learning support has developed from situations where students were left pretty well to themselves to cope with correspondence notes and associated assignment work. Tutors are encouraged to engage in meaningful two way communication with their students, in writing or via other media. Seminars, workshops and summer schools are being looked at more critically and, when appropriate and possible, alternative strategies, more suitable to the needs of students, are being used. Personal contact between students and tutors, and students and students, supplements more formal arrangements. Arrangements are made for students to have access to learning resources in addition to formal study materials.

Student-tutor interaction has also changed significantly. Once upon a time this involved students receiving materials, reading them, submitting written assignments and receiving marks in the form of alphas or numbers. Whilst this still continues, there is now also a whole range of complex two way communications taking place between students and tutors.

Tutors are now often expected to provide much more than a simple alpha or numerical mark; indeed they are encouraged to continue and enhance the learning process by indicating to students how they might improve their responses, referring them to references which will add to ideas raised in assignments, supporting them when they are having difficulties and bringing them back to earth when they get too carried away. These communiations no longer take place only on paper. They may involve interaction in face to face situations, by telephone, via computers, during television and radio broadcasts, by exchange of audio and video recordings and by various combinations of two or more of these.

And then there is learning management, a process of ongoing educational support and counselling during a student's course of study. If a student experiences particular difficulty, if a student is not sufficiently challenged, if the chosen course of study turns out not to be appropriate, the student can discuss this with a mentor, responsible for that student's pastoral care and consider ways of dealing with the situation. At its most passive, learning management is provided in response to students' requests. It can also be pro-active with mentors on the alert for, and taking action in response to, danger signals such as late return of assignments, poor marks, changes in students' personal situations and unsatisfactory performances by tutors.

Behind services to students are administrative services which distance education institutions have over the years developed to high levels of sophistication. They include processes for employing tutors, stock control systems, assignment traffic recording/monitoring systems and processes associated with certification.

Computers are increasingly being used to provide, or help provide, services to distance education students. Their usefulness may be more apparent in the case of students records but there are also very useful programs associated with counselling, stock control, assignment traffic control, tutor payments, and so on. However, the decision to use computers to supplement or provide student services should be based on a thoughtful analysis of the tasks to be performed and a considered weighing up of the initial and ongoing investment against the projected output.

TECHNOLOGIES

GENERAL

Developments in technology have had a tremendous impact on distance education. They have opened up opportunities but they have also highlighted problems, in particular those associated with the differences between rich and poor countries. Sections 4.2 to 4.6 which follow examine some of the advantages of technologies in distance education, some of the general barriers to their effective use, specific problems for poor countries and some of the issues involved in overcoming the difficulties.

ADVANTAGES

New technologies have added to the extent to which distance education overcomes disadvantage.

Whilst there is a tendency for distance educationalists to argue that traditional face to face teaching is unique in placing restrictions on actual and intending students, they themselves can, and often do, impose limitations — students can be required to submit assignments according to prescribed schedules, attend compulsory residential schools and sit for examinations at set times. But the way that distance education creates barriers, which is relevant here, is to use the printed word as the basis for its study materials and the written word as the basis for student assignment work. This is inappropriate for a large number of students, ranging from those who are simply not comfortable with the printed word through to those who are illiterate. Depending upon the nature of the educational program which is being provided, it may well be more meaningful to use alternative technologies — young people who shy away from printed materials may, for example, be far more at ease with learning experiences based on video games.

The new technologies also provide the capacity for far greater interaction. There is the immediate interaction of computer aided instruction and the delayed interaction of recorded audio tapes sent between student and tutor.

In the past many practical activities have not been possible for distance education students, due to the inaccessibility of appropriate equipment or due to the expense and danger associated with the equipment or processes. The new technologies offer the possibility of increasingly realistic simulated experiences in a whole host of areas — flying areoplanes, conducting chemical experiments and handling explosives.

Many students have to overcome various levels of apathy and hostility to the learning process in general and to traditional methods and media in particular. Using media which create interest, which provide novelty and which are, in fact, the media with which students are comfortable because they are using them at home, at work or at play, can provide a degree of motivation that students do not always associate with education and training.

As I have indicated elsewhere, there is increasing pressure on educational organizations to be more cost effective. The new technologies add to the means by which distance education programs provide economies of scale and lessen the need for capital intensive and quickly out-dated buildings and equipment. But the new technologies also provide increased economies when they are used to prepare and produce print-based materials. The introduction of computerised qord processing and type setting provides the opportunity for more efficient editing and exchange of materials; computer aided graphics reduce the need for repetitive art work; desktop publishing programs introduce greater efficiencies still; and new high speed printers offer cheaper materials more quickly.

There is growing recognition that, for many students and for many educational programs, eductors need to go beyond their traditional roles of lecturers and markers of assignments and examinations. They need to manage diverse and complicated individual learning programs and to become facilitators and mentors rather than the focus of all attention and the source of all knowledge and wisdom. But this requires careful record keeping for some very involved processes, record keeping which is not only accurate but is also capable of providing information which will enable educators to assist students to make their individual progress through, amend, or even abandon, their courses of study. A fundamental requirement for the distance educator to be able to fulfill this role is a sophisticated assignment tracking system. There are now many computer based programs which provide such learning management at high levels of complexity.

SHARING TECHNOLOGY-BASED RESOURCES

There are two main reasons given for sharing educational resources. I have already mentioned the associated economies and I now add the sharing of academic and instructional expertise. Both are telling reasons for distance education programs to be based on shared resources as their most significant costs are associated with the development and production of their study materials and because they have some potential for sharing expertise around. The new technologies offer considerable scope for sharing; indeed the very high level of sophistication and resources required to develop technology based resources makes it essential if programs of any usefulness are to be developed.

Not only is it possible, with the correct planning, to share audio and video tapes, audio and video discs, radio and television broadcasts and computer based software and courseware. As more and more printed materials are based on computerised word-processing, type setting and graphics, the potential increases for the cost-effective sharing of copy in digital form.

GENERAL BARRIERS TO EFFECTIVE USE OF TECHNOLOGY

I have written elsewhere about significant trends in the new technologies (ICDE Bulletin, May, 1984). I identified decreasing cost, increasing versatility, increasing user friendliness, standardization of formats and protocols and the capacity for technologies to interact.

In that article I also wrote of barriers to effective use of the new technologies, mentioning educational imperialism, lack of communication and co-operation between organizations, the unfair and excessive reliance on enthusiastic amateurs, educational conservatism and the high level of resources and sophistication needed for meaningful development and implementation of technology based learning. To these barriers I now add the "cargo cult" of technology. This assumes that, if the equipment is obtained, the courseware will appear by magic. The most recent, example of this is the satellite but it is equally true of computers, broadcast television, recorded video and recorded audio. The "cargo cult" mentality manifests itself in a number of ways — capital investment which is not backed up by recurrent funding; installation of complicated equipment without a corresponding provision of technical staff; reliance on one enthusiast who may move on leaving behind equipment that no one else understands and/or cares about; the acquisition of equipment which is not appropriate to the educational tasks and the situations of students; and the development of courseware which assumes student support systems which are just not there.

BARRIERS IN POOR COUNTRIES

In addition to the general barriers listed above, developing countries have specific difficulties if they wish to use the new technologies effectively. I have attended a number of conferences including, I regret to say, those organised by the ICDE, where delegates from well-to-do organizations in well-to-do countries deliver to their less well off colleagues gratuitous advice on how to solve their educational problems — especially those of access by students — by the use of expensive and sophisticated technologies which rely upon expensive and sophisticated technological infra-structures, in particular those associated with telecommunications.

This does not provide much joy to educationalists from countries which do not even have an effective postal system, let alone terrestrial or satellite based telecommunications systems. However, it is interesting to note that satellites do offer the opportunities for developing countries to leap straight into the new systems of communicatons without having to compete with, discard, or complement well established existing systems (because they do not have them). Of course this is only possible if — and it is a big "if" — a generous benefactor donates the necessary equipment and training. This happened to some extent when the University of the West Indies made effective use of satellite space and equipment donated by the USA.

The lack of equipment, resources and expertise is often evident in developing countries and in individual educational institutions and systems in those countries. Even when institutions have the necessary resources, this does not mean that students will have access to them. In particular, distance education students, who are unable to get to the campuses where the resources are located, may be required to obtain their own equipment or to make arrangements to gain access to local equipment. This raises considerable problems for students from low socio-economic backgrounds.

Another problem for poorer countries and poorer educational institutions is that, whilst they may receive donations or grants which enable them to acquire equipment and systems, they will not have the recurrent funding necessary to develop software and courseware, to maintain the equipment or to replace it. In addition there may just not be the technical expertise available to provide that sort of expertise.

Before enthusiastically adopting technology to deliver learning, one must consider the nature of one's students. Their cultural backgrounds, the language with which they are most comfortable, their attitudes to and their familiarity with technologies, must all be considered. One cannot assume a homogeneous population in any country, but in certain developing countries student backgrounds can vary tremendously, from each other and from those seeking to educate them. There are five hundred languages spoken in New Guniea. The sense of humour of a tribal member of that country's Highlands is quite different to that of the well meaning city dweller, educated in an Australian university, who is attempting to develop an audio tape from which the tribesman is to learn; and certainly their experiences with various technologies will not be the same.

In most countries, politicians are interested in education and they are interested in telecommunications. In developing countries, where they are concerned to see rapid and co-ordinated development in both areas, they may see it as necessary to set parameters for educational institutions in terms of their curricula and use of technologies. In those developing countries where there is some volatility in the political situation or where the governments see the education systems as the means to promote particular values educationalists will need to take account of how this may affect their use of technology, particularly when they consider using courseware developed elsewhere.

USING TECHNOLOGY EFFECTIVELY

There are four areas to consider when dealing with the question of providing meaningful technology based distance education to the many and varied persons and groups in the different countries of the world:

planning is about taking informed decisions. It is about establishing educational priorities within a social, economic and political context and translating these priorities into investment in capital, in recurrent activities and in program development. At a more specific level, it is about designing learning programs which will use appropriate combinations of learning strategies and learning resources to achieve identified educational objectives; and it is about planning appropriate student support systems — it is not much use designing interactive computerised learning programs if students do not have access to the equipment or if they are reluctant to use it;

co-ordination of the development of technology based courseware is often preferable, even necessary. In educational terms, academic and technical expertise can be concentrated in the development of resources to be made available to those who would not normally have access to it. The development of much of the courseware is complex, time consuming and expensive. More and more governments demand co-ordinated approaches, sometimes directly, sometimes indirectly, for example, through a telecommunications policy. Where co-ordination is to be found, it is usually within institutions and educational systems; sometimes it is evident at a provincial or even national level;

co-operation is a way of achieving more educationally effective and cost effective use of the technologies where co-ordination is inappropriate or impossible, for example when we consider the sharing of resources and talent between nations. It can apply to the development of resources and to the delivery of programs and will involve various levels of involvement by participants and various services to students;

sharing information and resources is a more specific form of co-operation.

How willing are institutions, systems and countries to share?

Much has been made of the "not developed here" syndrome as a barrier to sharing. Whilst this continued to be the case in countries and institutions which can afford to take such a stand, it is certainly less true of those whose resources are severely limited.

The "aid versus trade" dilemma reflects conflicting pressures, often from government, placed on educational organizations. It will not go away but it can be reduced by clear foreign policy guidelines within countries and economic support from international organizations like UNESCO and the World Bank.

When it comes to sharing resources between countries, cultural differences may present special problems. Given the diversity of and tensions between cultures in some countries, it will be important to obtain advice from those who understand the cultural backgrounds of the intended students.

The problems associated with differences in language operate at various levels and in different areas. First there are differences in languages between countries. Then there are colloquial, social and educational differences. The spoken language may vary from the written language. Technical language is different to social language which is different to academic language. Maybe none of these differences matter because we can assume that English is the universal language of eduction. This is too glib a solution. One must accept that often this is not the case and that, to use resources developed in one country, there could be a need for translation. There is remarkably little information available on the translation of print and non-print based learning resources from one culture to another and from one language to another. There is a need for a study to be conducted on the need for translation, on the extent to which the need is presently being met and on the methods being used. The study should lead to recommendations for providing information on available translations and translation services and for improving present strategies.

For there to be meaningful inter institutional and international co-operation in the development and sharing of technology based resources and information, various levels of staff development and interaction are necessary. Firstly, there is a need for senior personnel to meet in order to establish broad policy guidelines — these meetings should be kept to a minimum. Secondly, operatives must communicate to develop specific plans. Their meetings should be more frequent than those of senior personnel and must therefore take forms other than face to face meetings. Teleconferences, exchange of written and recorded communications and study tours are all useful if planned correctly. However, much more use should be made of staff secondments and staff exchanges which involve substantial periods of time and have clearly identified practical outcomes, in particular the development of learning programs and learning resources.

GOVERNMENT AND DISTANCE EDUCATION

The relationship between government and distance education has changed. At one time governments in most countries displayed only luke warm interest in distance education, if they displayed any at all. Interestingly enough, governments in developing countries were the first to look to distance education as a means of achieving their social, economic and political objectives, probably because they were more desperate. Governments in developed countries have now also seen the possibilities of alternatives to face to face teaching to develop in their populations the knowledge, attitudes and skills to which they attach high priority. This is a reflection of a change in attitude by governments to education as a whole — from fairly unthinking support because it was a good thing, to making quite specific demands to implement government priorities.

As economic situations in all countries become less favorable these demands increase and education is required to play its part in training work forces better able to contribute to economic improvement. If public education appears unable or unwilling to do so, various levels of encouragement are provided. It is not surprising that the encouragement is often linked to funding. This may be in the form of grants earmarked for special projects, the withdrawal of funds if government expectations are not met the increasing tendency to direct government funds to educational activities conducted by organizations other than the traditional public educational institutions and greater government encouragement for the community and the employment sector to contribute to meeting the cost of education and training.

Governments have begun to concentrate on distance education and other non-traditional learning strategies as the appropriate means of meeting the educational needs of specifically identified groups of actual and potential students. I will take the liberty of quoting myself as I described the attitude of the government of Victoria, which is one of six states in Australia (Smith, Kelly et al (1987)). This dealt with "open learning" to which i will refer again later in this paper but I have selected extracts which equally apply to distance education:

"The Victorian government's social justice policy seeks to overcome disadvantage within the community and has two broad implications for education. It means that members of the community must be helped to overcome educational disadvantage and that education must be used to help them overcome social and/or vocational disadvantage... If those students are persons for whom traditional learning methods are inappropriate, then alternative methods will need to be provided. Adults with social and work commitments, geographically isolated persons, house-bound women, physically or mentally disabled persons, Aborigines and the young unemployed are some groups for whom regular attendance at (eucational institutions) at set times may well not be appropriate...

Both at the state and the national levels, governments look to (technical and further education) to contribute to their economic and labour market policies... (technical and further education) is being asked to do more for less... there are further efficiencies inherent in... an... approach which is not dependent upon... the use of capital intensive buildings... the provision of expensive and quickly out-dated facilities... having to cover the cost of travel and accommodation necessary for students to attend campus-based classes (looking back on this extract, I would want to add the additional economy of providing statewide, even nation-wide, resources at one go, without the need for local educational institutions having to set up their own courses, staff structures and processes for developing learning resources).

...both state and federal governments are concerned with Australia's internal and international trading situation. The (learning) packages... are considered to be marketable commodities both to sections of industry and the community, and to an education hungry third world.

... open learning is expected to be a significant way of providing flexible and relevant training to support the... governments' manpower planning programmes, which range from training unemployed youth... through to retraining adults, already in the workforce, whose skills have become outdated." (pages 86 to 88).

PRIVATIZATION OF EDUCATION

Privatization of education is a world-wide trend, paradoxically often under governments concerned to exercise greater control over education and its outcomes. Distance education institutions and systems will need to:

compete more strenuously for government funds, against each other and against private organizations;

consider various entrepreneurial ventures which might have seemed slightly distasteful in the past;

seek funds from sources other than ministries of education and, for that matter, government;

enter into more co-operative ventures with each other, other educational bodies and with the private sector.

They are well placed to do this provided that their approach is flexible and adventurous.They already have available learning resources developed earlier and the skills to develop more. Distance education learning modules can be combined with each other and with other resources and activities so as to suit the needs and requirements of different students and other clients.

DISTANCE EDUCATION AS A SEPARATE PHILOSOPHY

Paranoia is not uncommon amongst distance educationalists. How sensitive we all are to any real or imagined suggestion that our mode of learning is second rate has no legitimate theoretical basis and can easily be handled by face to face teachers as incidental parts of their work loads. How hard we have worked to establish respectability for our mode and how strenuously we strove to establish distance education as a separate branch of educational philosophy with its own experts and requiring trained specialists to implement it.

There certainly is justification for concern at the entrenched positions of educational conservatives who believe that the only worthwhile method of learning is to attend teacher centred, face to face classes at fixed times and fixed places. It certainly is necessary to achieve "parity of esteem" (Jevons, 1987) for alternative learning and teaching strategies. This conference is one testimony to the success of efforts to do so. The interest and support demonstrated by government and industry for alternative learning are additional evidence. And the many, many learned articles, books, lectures and conferences on correspondence education... that is, external studies... that is, off-campus studies... that is, distance education, are powerful signs of respectability.

The pity of it is that this has developed its own entrenched positions and self indulgences. In particular it has resulted in a perceived need to identify distance education as a separate mode of learning, together with the consequent need to categorise learning activities, institutions and systems as being either distance education or not.

Active and fertile minds have been devoted to establishing the correct definition of distance education. In the first edition of "The American Journal of Distance Education" (1987) Garrison and Shale continue the debate with their challenge to Keegan. As one reads through this article and thinks back on others by such leading distance educationalists as Peters (1971) and Holmberg (1981 and 1987), one wonders at the futility of it all. What started off as a very necessary reaction against traditional barriers to the needs of various students has become a game of semantics, philosophical hair splitting and defence of empires. No matter how sincere and dedicated educationalists may be, they will be drawn into these games because they invariably begin by asking the wrong question, namely "What is distance education?" This opens the way for a process which is highly entertaining for those interested in point scoring but does precious little in terms of meeting the educational needs of the community. As the article by Garrison and Shale demonstrates, one ends up attributing to "distance education" any characteristics one wishes. If, for example, a philosopher of distance education believes that the new technologies are wonderful, then any educational activity involving effective use of satellites, computers and laser discs is included under the distance education heading.

The only problem is that traditional educationalists play the same games.

As a result, confusion and territorial disputes rage. At the same time life, as they say, goes on and confuses things even more. Distance educators use face to face strategies, face to face teachers, use distance education techniques. New learning strategies emerge, especially in the area of the new technologies and both camps lay claim to them as part of their domain. Resources nominally developed for use in one mode are increasingly used in the other.

What really happens is that educators who decide to get on with the job do so by asking a quite different question — "How can I best achieve identified educational objectives with this particular student, or group of students, given the limitations of available talent and resources, administrative requirements, social conditions, the economy, industrial factors and prevailing politics?"

This leads to considerations which are independent of notions like distance education and traditional education. These, as I have suggested above, are too broad and value laden to be useful. Instead, one must look at a range of much more specific strategies and resources which will be combined, in different ways on different occasions, to provide the best learning possible. If the package ends up looking like one that the disciple of one school of thought would identify as being pure distance education, this is a coincidence and does not matter. In any case, the discipline of another school would probably find a feature that excluded it from his or her definition.

Many of the developments in distance education which I have described have been leading to this "open learning" approach — as indeed have developments in other areas of education. Technologies have blurred traditional distinctions and have opened up the possibilities of combining a whole range of strategies. Government expectations, economic pressures and encouragement to privatize require flexible and rapid responses which are impeded by strict conformity to prescribed definitions and associated processes of distance education. Student support systems designed with distance education students in mind have meaningful application for other students. The team approach to developing structured, resource based learning programs makes a lot of sense for all educational activity, as has been demonstrated in various mixed mode and fleximode programs.

CONCLUSION

Correspondence education began because of a concern for students. It developed teaching methods which overcame barriers to education put in the way of certain members of society. That tradition of genuine concern for students continues, even though it is often at odds with the very natural tendency to promote the interest and comforts of educators and institutions. Inevitably it leads to an approach which provides students with the best regardless of into which theoretical compartment they may or may not fit and regardless of the convenience, fame and glory of educators and their institutions.

So the question is where to go from here. It would be a pity not to meet again in three years' time in some exotic part of the world. But when we do, maybe it should be as educators concerned with an open approach to learning, rather than adherents to an educational religion of days gone by.

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BIOGRAPHICAL DETAILS

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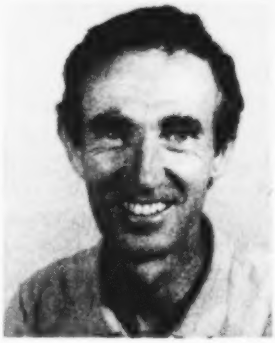

Organisational autonomy and coordination in distance education

PATRICK GUITON

INTRODUCTION

"Myopia" is a condition easy enough to diagnose in others even without the benefit of a medical training. In this non-clinical sense it is applied to those who, from our own perspective, seem to be protecting some sectional interest against a broader vision. Less well known is myopia's opposite, "hypermetropia" which denotes "farsightedness" but which is nevertheless still a clinical condition requiring optical adjustment. When any scheme for the coordination of resources is said to have been frustrated by "institutional myopia" it may therefore be important to look with some care at the organisational context in order to ensure that any existing problem has not been compounded by "planner's hypermetropia".

In this paper I want to use a number of case studies from current developments in Australian higher distance education to examine some aspects of possible tension between organisational autonomy and broader coordination. I want to indicate some of the factors which may need to be addressed in developing schemes for rationalisation of resources with the hope that we, as practitioners in distance education, may assist in providing the best possible conditions for these to work effectively.

EFFICIENCY, EFFECTIVENESS AND AUTONOMY

Towards the end of 1986 the Australian Commonwealth Tertiary Education Commission published its Review of Efficiency and Effectiveness in Higher Education.[1] The intent, and the substance of the report were obvious from its title and, significantly, it had a chapter devoted exclusively to External Studies.

It is widely known that Australia, like Sweden, organises its higher distance education according to the "integrated" model, with on-campus and off-campus students receiving the same curriculum taught and assessed by the same academic faculty. In a paper presented at the 13th I.C.D.E. Forum I identified Four models of organisational structure in the Australian University sector, these reflecting the relative degree of integration between internal and external studies.[2] A most important element in this integrations is the capacity for students to move readily between the modes of study as their circumstances change, or in some cases, to take course units in both modes concurrently. The relative advantages and disadvantages of "mixed-mode" and "single-mode" distance education institutions have been argued at length but rarely from a student's perspective. Emphasis tends to be placed on the greater commitment of academic effort and of institutional resources in the purpose-built institution, rather than on the relative accessibility of course writer to the student and flexibility of study mode choice in the dual mode structure. The Australian Review of Efficiency and Effectiveness focuses attention on rationalisation of effort in course delivery in one mode only — the external. It must therefore pose some threat to the central feature of Australian higher distance education, the integration of "internal" on-campus and "external" off-campus studies.

Open systems theory offers an approach in which exchanges between an organisation and its environment provide the central focus. Rumble[3] has shown how this approach can be applied in an analysis of distance education organisation. He defines two operational subsystems (course materials and student services) and specifies the logistic and regulatory boundary activities necessary for the system to operate. Various writers have warned against applying the organic analogies implicit in systems theory too readily to educational organisations. The concept of a primary task output fits rather awkwardly and system "goals and objectives" will in reality reflect a complex of rational, political, collegial and purely random pressures and strategies. Nevertheless, the open systems model does help in emphasising two major features of organisational structure and development which have particular importance when we wish to consider the pressures for or against inter-institutional collaboration. Firstly, in systems analysis an organism, (or an organisation) seeks to survive in adaptation to, and control of, its environment. The impetus is towards STABILITY in the face of outside pressure. Secondly, it is seen to adapt its structure through feedback from its transactions with other organisations: the impetus is towards a reinforcement of AUTONOMY.

Over the past decade Australian higher education institutions have been encouraged to differentiate their academic profiles rather than to replicate each others course offerings. They have responded with varying and fluctuating degrees of enthusiasm and success but most have fought tenaciously to reinforce and strengthen the autonomy of their individual profiles. Will Universities, under pressure to identify their unique and differentiated qualities, be able or willing to respond to calls for them to establish collaborative networks which will reduce their individual autonomy in an uncertain environmental context? What are the influences which will encourage or drive them towards establishing networks of shared effort? It might have been anticipated that a Government Review of Efficiency and Effectiveness in Higher Education would seek to rationalise the teaching being carried out in the lecture theatres of 19 Universities and 34 Colleges of Advanced Education across the country. The prospect of inter-campus teaching by electronic media links could have been addressed. The problem of overteaching, referred to in passing, could have been linked to the opportunities already demonstrated in some dual mode teaching Universities whereby independent study materials developed for off-campus students are used systematically by on-campus students and their tutors. But the opportunity was either overlooked or recognised and put back in the "too-hard" basket. Commenting on the prospects for rationalisation between dual mode institutions the most that the Commission's advisory body could do was to speculate, somewhat diffidently;

"it may be that such a method of cooperation would require the modification of an institution's face-to-face courses to fit in with the external materials the institution is using![4]

Such wishful thinking is unlikely to have the desired effect if institutions of higher education do indeed have a central propensity to protect their autonomy. In these circumstances it is hardly surprising to find many of those involved with integrated dual mode studies concerned at the prospect of having the external mode detached from the autonomous organisation for a separate process of "rationalisation". External mode teaching is highly visible whilst internal mode lecturing is generally not. Whilst the case for collaboration in, and rationalisation of, face-to-face teaching is just as clear, the capacity or perhaps the will to address the issue is not equally strong. The political scientist Wildavsky has this advice for planners:

"If you can't change what you should, change what you can."[5]

The Australian Federal Government seeks to establish a network through which specified providers of external studies will develop national mandates for particular academic disciplines. Insofar as students may enrol with these institutions across the continent, there is no argument of principle since distance education may be presumed to be distance independent provided adequate provisions are made for local support services and localised residential schools, tutorials and laboratory attendances. But the scheme goes further. Because a range of Australian higher education institutions are dependent on external enrollments for their viability, they will be permitted to continue — but only if they use course materials developed elsewhere. Academic faculties' resistence to adopting imported course materials for their own external mode teaching has been dismissed as merely the expression of individualistic myopia or the N.I.H. (not invented here) factor.[6] If the integration of dual mode teaching is to be maintained, critics will however now have to extend the N.I.H. principle to the internal mode. Is the logical outcome of this development, a national curriculum centre of the Italian Universita a Distinza type — but serving both modes for Australian higher education? It seems unlikely.

FUNCTIONAL AUTONOMY, CONTEXTUAL CONSTRAINTS AND COLLABORATION

If educational organisations favour autonomy and their academic members are strongly influenced by collegial rather than organisational values, then it is hardly surprising to find several pessimistic reports of attempts at the development and operation of Consortia. The University of Mid-America is one well known example and Rumble quotes Neil in reflective mood.

"practical schemes of collaboration are difficult to design and implement and are consequently rather rare. Further, even when a scheme is launched there seems to be a rather high chance that it will atrophy or collapse after a depressingly short time"[7]

As against this we have (as I write in October 1987) the very interesting and promising examples of the British Columbia Distance Education Consortium and of the Commonwealth initiative for cooperation in distance education. There will no doubt be other opportunities for people closer to these developments to discuss them during the Conference. I will confine myself to examples closer to home even if they are much less ambitious.

The organisational theorists, Katz and Kahn writing in 1966 made this interesting observation:

"The fact that organisations have built-in protective devices to maintain stability and that they are notoriously difficult to change in the direction of some reformer's desires should not obscure the realities ofthe dynamic interrelationships of any social structure with its social and natural environment".[8]

Educational organisations are not just hopelessly inert but neither is collaboration between them self-evidently attainable as planners assert. Are there then any factors which may help us to compare the relative chances of success in schemes intended to improve cooperation between educational institutions involed in distance education? I want to suggest two and to relate them to a number of current examples of cooperation with which I am familiar.

Alvin Gouldner the American Sociologist talks of "functional autonomy" to distinguish between systems in which the parts are highly interdependent (low functional autonomy) and those in which the component parts are relatively independent and therefore have high functional autonomy.

"Operationally speaking we might say that the functional autonomy of a system part is the probability that it can survive separation from the system".[9]

Using this concept we may argue that the School of External Studies in the University of Queensland had (at least until very recently) higher functional autonomy than the Off-campus Programme at Deakin University. But, whilst the "Queensland model" might survive better under an imposed structure of rationalisation because it would not have to take the whole system of classroom teaching with it, that does not necessarily imply that the University of Queensland is more likely to adopt such a collaborative structure than is Deakin University. For that type of indicator we need to turn to the work of the Swedish writers Dahllof (1977, 1986) and Willen (1981) who have identified Contextual Frame Conditions as:

"those parts of the immediate environment which may be subject to change but which most often act as fairly fixed restrictions within which the task must be performed".[10]

For Dahllof the important question is "under what conditions..." will voluntary cooperation between institutions, or rationalisations imposed from outside be most likely to succeed or to fail. The types of frame factors or contextual constraints likely to be significant range from external environmental factors such as demographic and geographic distribution to background historical factors and established political conditions.

In summary it is important to stress that the two factors introduced here in relation to a range of Australian case studies — functional autonomy in organisational structure and contextual frame factors — are used merely as indicators of comparison; they are not explanatory.

A. COUNTRY CONTRACTING IN WESTERN AUSTRALIA

Dahllof has pointed to geographic and demographic contextual frame factors which have influenced the development of higher distance education in favour of dual mode rather than Open Universities both in Australia and Sweden.[11]

In Western Australia an additional factor is the heavy concentration of population in the metropolitan capital city and the absence of substantial provincial centres beyond. The development of technical colleges and, more recently, "community" colleges in a number of relatively small country towns has nevertheless led to pressure for some tertiary level education to be provided locally in the classroom mode. Country contracting has been a collaborative response through which metropolitan tertiary institutions have accredited selected technical education sector staff to teach some first year courses (Computing, Accounting, Australian Studies) to locally based students. By providing its own external studies course materials both to contracted staff and students the city institution can effectively control not only the curriculum but also its delivery. Since it is now standard practice in several dual mode institutions for common print material to be used in both modes the extension of such a practice under country contractual arrangements does not create an anomaly and the extension of campus teaching in this way does not result in a high level of functional autonomy for distance education. For this reason, and also because the metropolitan institution extends its recruitment base and absorbs the students into its own second year programme, prospects for the success of this collaborative scheme appear good.

B. A JOINT PRINCIPAL PROVIDER OF EXTERNAL STUDIES IN WESTERN AUSTRALIA

Three Western Australian tertiary education institutions are each providing a range of generally complementary programmes to a relatively small number of students but each form an organisational structure which closely integrates curriculum content, teaching staff and assessment methods for on and off campus students. Federal Government concerns, expressed through its Review of Efficiency and Effectiveness, have focussed on the perceived need for greater economies of scale to be effected in course materials production even if these may cut across the identification of students with their awarding institution.

If, as has been suggested earlier, educational institutions may generally be expected to act in ways which serve to protect their autonomy, it may also be assumed that they will resist outside attempts to impose collaboration of their external studies programmes upon them. Their specific responses may however depend on the degree of functional autonomy attained by the distance education operation in relation to the organisation as a whole. Integration of the study modes and regular movement of students between them indicates that the functional autonomy of the external mode will be low.

Imposed rationalisation of the institutions' academic profiles for one study mode only must therefore be disturbing for the integrity of educational programmes and the students using them even if they can be justified on economic grounds. Shared student supports, extension of credit transfer provisions and co-ordination of planning processes so as to avoid future duplication of offerings, are all ways of improving services to students without cutting across their integration with a specific dual mode programme. Unfortunately these are likely to be seen by central planners as necessary but not sufficient to meet their criteria of rationalisation. By insisting on a pattern of institutional specialisation of course offerings in distance education but *not* also in campus teaching, the planners will force a high level of functional autonomy on the external studies operations which could well isolate them from the mainstream educational activity of their institutions. In the Western Australian context it should be noted that one of the institutions involved has no less than 70% of all its awards fully available for study in both the internal and external modes. This degree or interlock is unusual, some would say extravagant. But is it myopia?

An interesting comparison with the current Western Australian situation is offered in British Columbia, Canada, where the University of British Columbia, Simon Fraser University and the University of Victoria agreed, together with the Open Learning Institute and the Knowledge Network, to establish a consortium

"to coordinate formally the planning and delivery of their off-campus program activities to ensure that every person in British Columbia, regardless to place of residence has an opportunity to complete appropriate recognised university degrees."[12]

To an outsider, it seems very unlikely that these Universities each with its own distance education programme, would have agreed to such coordination without the catalytic influence of the Open Learning Institute and the Knowledge Network. Once established however the corsortium's powers are substantial.

"... to ensure the opportunity *and appropriate academic management* for the completion of an 'Open' degree on the basis of credits obtained by candidates for coursed taken from the offerings of member institutions and from various other institutions"

and

"to coordinate needs, assessment procedures and program planning for the purpose of *developing an annual program and budget submission*"[13]

It is likely that other contextual factors facilitating or hindering interinstitutional collaboration in Western Australia and in British Columbia will have been quite different. Political will, backed by substantial financial resources is significantly more powerful than political will alone. At a rather different level, it would be interesting to know just how common it was for students as the University of British Columbia to study an award course concurrently on and off campus or to move regularly between the study modes.

C. WOMENS STUDIES AND THE AUSTRALIAN DUAL MODE UNIVERSITIES

The development of Womens Studies degree programmes in three Australian Universities (Deakin, Murdoch, Queensland) has been well documented.[14] None of the three institutions had either the staff resources or the academic resolve to set up such a programme on its own. By pooling course units through distance education, committed academic staff in each University were able to bring about a desired academic result without having to win collegial commitment of substantial resources in competition with other academic and institutional priorities. The development of collaboration here reflected strategic use of academic planning contextual factors. In order to achieve the desired result the distance education mode played a valuable facilitating role but remained firmly imbedded in the academic structure of each University, its functional autonomy was appropriately held at a low level.

D. THE TOOWOOMBA ACCORD AND THE NATIONAL DISTANCE EDUCATION CONSORTIUM

There have been two recent initiatives taken with the object of establishing national networks of higher distance education in Australia. The first, dating from 1983, has seen the five dual mode Universities increasing opportunities for their students to cross-enrol in a range of course units from the other provider institutions. Progress has been steady rather than dramatic and, because the scheme is based on the idea of enlarging student choices rather than reducing the range and number of courses offered, it has not directly met central planners' objectives for *rationalisation*. It has, however, had one very important advantage in the Universities themselves; cross-enrolment in the external mode is largely invisible to academic faculty already well accustomed to dealing with their own distant students and it therefore poses no challenge to the integration of teaching modes even when the faculty member's class includes a number of students working for an award from an institution on the other side of the continent. In this structure the functional autonomy of distance education remains low and well embedded within the individual institutional structures.

The second initiative fostered by the Colleges of Advanced Education in 1987 places emphasis on increasing opportunities for institutions to buy and sell their course materials. This follows closely the conventional wisdom of rationalists in the central planning processes, namely that economics of scale in course material production represent the single most important objective in the rationalisation process. The test will be to see how institutions opting, or forced, to use imported materials for teaching one half of their enrollees (the externals) maintain the integration of their studies with that of the other half (the internals). In this situation the isolation of distance education would not only become very obvious, it could also rather easily be pushed to the periphery of institutional vision.

E. OFFSHORE DISTANCE EDUCATION

The practive of "tuition-free" distance education in Australia has largely precluded enrolment of overseas students in courses financed by Australian taxpayers. "Offshore" provision of distance education was therefor until recently a matter of inter-institutional collaboration such as that developed by the Royal Melbourne Institute of Technology with the Open College of East Asia: provision of course materials and external examining towards a local award. Now various institutions are enrolling offshore students directly in their programmes, often in collaboration with agencies, or colleges in an overseas country. An example of this collaboration is provided by the international network established by Disted College in Malaysia in conjunction with a range of universities, colleges and correspondence schools in Australia, Britain and Canada. The arrangement provides for Malaysian resident students to enrol directly in the overseas awarding institution's courses and to receive that institution's learning resources whilst Disted provides enrolment, tuition and counselling. Although these students must pay full-cost fees for their courses, they avoid the additional subsistence costs incurred by their fellow nationals who attend the provider institutions in person. In some cases Disted enrolled students may also operate an "open sandwich" study arrangement with a final year being taken on-campus. For current purposes it may be noted that this type of offshore distance education structure retains relatively low functional autonomy in the awarding institutions; course curriculum and course materials are those used in the originating country and assessment is also integrated. The possibilities for wider international networking under this structure are readily apparent and reflect the basic aim recently declared through the publication of the Initiative for Commonwealth Cooperation in Distance Education:

> "...that any learner anywhere (in the Commonwealth) shall be able to study any distance-teaching programmes available from any bona fide college or University (in the Commonwealth)."[15]

With or without my parentheses this is certainly a challenge worth accepting.

CONCLUSION

It is interesting that when cooperation is planned between organisations rather than between individuals we very often use words with significant double meanings. My Macquarie Dictionary tells me that to collaborate is (i) "to work one with another" but also (ii) "to cooperate treacherously", whilst to rationalise is (i) "to reorganise resources so as to promote efficiency or economy" but also (ii) "to justify one's behaviour by plausible explanations so as to deceive oneself or others".

It would be unfortunate to end on a pessimistic or a cynical note. Much cooperation is in fact going on in Australian distance education. Most that is successful has come about from grassroots initiatives. The Swedish eductional analyst Jan-Erich Lane has argued persuasively that, in fact,

> "autonomy is not inversely proportional to coordination as is sometimes believed. Governmental control is neither a sufficient nor necessary condition for coordination which may result from the voluntary activities of various parts of the system."[16]

The real problem with rationalisation in the interests of efficiency and effectiveness seems not to be that it is coordinated, not that it demands collaboration, but rather that it involves centralised directions and control. Planners have argued that distance educators have been offered the opportunities to regulate themselves but have been too shortsighted to take advantage of them. It is to be hoped that in pressing higher education institutions to look well beyond the ends of their noses the planners have not inadvertently moved distance education out of sight — and therefore out of mind.

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BIOGRAPHICAL DETAILS

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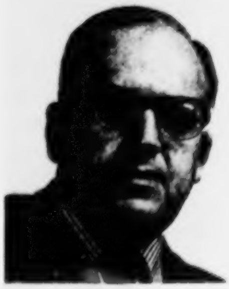

Distance teaching and credit transfer

JOHN HORLOCK

Distance teaching and credit transfer are intimately linked. Distance teaching is frequently carried out in modular form, with students "stacking up" a series of modules into a qualification. With credit transfer (which involves mutual acceptance of academic material by two institutions) students can obtain a qualification by accumulating credits from more than one institution.

Such credit transfer is not new to some countries; for example the United States "conventional" first degree system is closely geared to credit transfer. However, it has not been widely used in the United Kingdom (except through the distance teaching network centred on the Open University, as described later). In the higher education system based on the conventional universities of the U.K., with a relatively short first degree (three years), the opportunity for credit transfer is limited because the courses must be planned carefully and precisely to fit into the short time available. For example, a third year course in chemistry may be closely related to and heavily dependent on an earlier second year course in the same institution and this clearly restricts the opportunities for credit transfer.

However, a system of credit transfer has been firmly established within the U.K. by the Open University, with some twenty other universities and the whole polytechnic sector (via the Council for National Academic Awards (CNAA)). Open University students can move to other institutions taking with them credit for their Open University work. Students from elsewhere can register with the Open University and gain credit towards an Open University degree from work successfully completed elsewhere. More generally a national information system, the Educational Counselling and Credit Transfer Information Service (ECCTIS), has been set up as a computerised informations system about courses and as a facilitator of credit transfer opportunities for the whole of U.K. higher education.

The incentive for credit transfer is probably greatest in a distance learning scheme for mature students. Such people may move from one part of the country to another and opportunity to study at a new "conventional" location, rather than "at a distance" may arise and may prove more attractive or convenient. Thus credit transfer should be designed to operate across the boundary between "conventional" degree-awarding institutions and distance learning educational establishments, as well as simply within the latter.

There are two exciting developments in distance learning/credit transfer which are now coming to the fore. Firstly there is the opportunity of credit transfer at international level between various countries and secondly there is the development of distance teaching into the postgraduate area. Coupled with the latter is the possible recognition of "in company" courses as part of a post-graduate degree.

International credit transfer may be thought of within regions (e.g. within Europe, within South East Asia); or across a natural grouping of countries (the Commonwealth). In Europe, credit transfer is being examined by the members of the European Association of Distance Teaching Universities (EADTU).

There are two obvious problems in such credit transfer:

(i) language barriers;

(ii) the different forms that modular courses may take in different distance teaching institutions. (For example the U.K. Open University "full credit" course requires some 400 hours of study and this is in excess of many courses offered elsewhere in Europe. An equivalence has to be established — e.g. one Open University credit (400 hours) equals say 4 Dutch Open University credits (100 hours each).

One of the attractions of international credit transfer lies in widening the profile of courses that is available to any one student in a particular country. It is less designed for physical transfer of the student between one country and another, for in general students are undertaking distance learning because they are relatively immobile. (They find it convenient to study at home rather than study at a full-time institution and this is one of the advantages of the distance learning system.)

An interesting current development is the proposal for a Commonwealth Open University by the Briggs Committee, agreed in principle by the Commonwealth Heads of Governments in October. Although a university is under consideration, it is really difficult to describe the proposal as a University as such for it will not register students for degrees. What is suggested is more of a brokerage agency which will take courses from one country (or commission new courses) and make them available more widely, throughout the Commonwealth or through regions of the Commonwealth. Obviously if these courses do become available world wide then the question of credit transfer will arise and the U.K. Open University expects to play a part in establishing the mechanism for Commonwealth credit transfer.

The Open University's experience to date with international credit transfer is limited to the University of East Asia in Macau and Hong Kong. Students there may take Open University courses which may have been modified locally to deal with individual circumstances; they are then examined, with external examiners drawn from U.K. Open University staff. Students obtaining credit from these courses can work towards a degree of the University of East Asia, or if they move to the United Kingdom they can bring credit with them for what are essentially Open University courses delivered overseas and for which examining standards have been effectively validated by Open University staff. The U.K. Open University will probably require similar arrangements for credit transfer through the Commonwealth Open University.

Also very exciting is the recent development of distance teaching at postgraduate level and, coupled with it, possible credit transfer between institutions (within one country, between two countries or between a non-educational institution (e.g. an industrial company) and an educational institution).

In Many Western countries recruitment of post experience students to postgraduate Masters courses has been weak. Nevertheless the necessity for these taught Masters courses, particularly in the rapidly developing science and technology areas, is clear. There is consequently a mismatch between recognised need (for updating the professional workforce) and demand (from a community of students who are unable to break off from a career to attend an educational institution for a largely full-time course).

There have therefore been rapid developments in distance education at postgraduate level in the United Kingdom and a series of courses, established at Masters and Diploma levels, has been produced (the Open University alone now has 10 professional and postgraduate diploma courses and 7 postgraduate Masters courses, all delivered on a distance learning basis). In the United States development has occurred within the "candid" T.V. area, in which lectures (recorded from those given at a conventional institution) are circulated to students in industry and commerce where they are tutored. There are thus two parallel developments — multimedia courses of the U.K. Open University type and candid T.V. courses. These are to some extent competing but the former have been developed for large numbers of students (as for undergraduate work) while the latter are being designed for relatively small numbers (the cheap cost of production then becomes important).

For the multi-media productions with which my own institution has been concerned there is a query as to whether we can justify the considerable costs of productions of these courses for relatively small numbers of students that are available in any one country. The question of availability of courses throughout Europe, either directly or by credit transfer, then becomes an important factor.

SUMMARY

As was stated at the beginning of this paper, credit transfer and distance teaching are intimately linked. Credit transfer between distanc learning institutions within one country is relatively straightforward. Credit transfer between a distance learning institution and conventional institutions is similarly straight forward and provides a major benefit for mature students who wish to study in a variety of ways, in a variety of places. Credit transfer across international boundaries is developing and has also been described. The importance of credit transfer in postgraduate study between academia and industry has been emphasised.

BIOGRAPHICAL DETAILS

Mr. Michael P. Lambert is the Associate Director of the National Home Study Council, Washington, D.C., USA.

He joined the NHSC in 1972. He was named NHSC Assistant Director in 1977 and Associate Director in 1987. He has authored numerous articles on correspondence instruction. He has also served as editor of several texts, including Home Study Course Development Handbook *(1988 edition). He has visited hundreds of correspondence institutions in his career and has lectured frequently on home study education.*

How to develop a correspondence course

MICHAEL P. LAMBERT

INTRODUCTION

Correspondence instruction, or distance study, in the United States is undergoing a vigorous rebirth, a renaissance in virtually every aspect from public acceptance to marketing sophistication to increased academic respect from traditional resident school educators.

Perhaps the most obvious area of change in U.S. home study education over the past two decades has been the dramatic improvement in course design and appearance. As a result, courses today are experiencing lower non-start rates, higher lesson completion rates and higher graduation rates than ever before. Public acceptance of home study has never been higher in the United States. Today, nearly 5 million students study by correspondence in the United States.

The purpose of this paper is to outline some of the basic steps used in home study course development in National Home Study Council member schools. Practical ideas and suggestions are offered which will hopefully help other distance study educators who are interested in the methods used by American course developers.

CORRESPONDENCE INSTRUCTION IN THE UNITED STATES

In the United States today, there are as many as 400 correspondence schools offering hundreds of different subjects by mail. The most popular courses are in electronics technology, computer literacy, accounting, travel training, and service-related career fields.

In the private home study school field in the United States there are 104 accredited institutions which annually enroll over 3 million students in 1,500 various courses.

A home study "course" is a series of printed texts, learning aids and other materials which can take students from 3 months to 4 years to complete. The typical course takes about 12 to 18 months to study. Most courses are vocational in nature and they attempt to import a "job skill" or income-producing competency in course graduates. Academic degrees at the associate or two-year level are also offered.

Home study students in the United States are generally in their 30's, are currently employed full time and seek job promotion as a result of completing a course.

In view of this, United States home study courses are designed as specially written, self-contained, self-paced and flexible learning experiences for busy adults. Most home study courses are prepared as self-instructional learning modules. The use of published, hard bound text books are the rare exception in the United States.

Correspondence courses in the United States are intended as an extension of classroom education and as an alternative learning opportunity for adults who are too involved in their careers to attend a residential school.

COSTS

The typical course today costs about $100,000 to $250,000 (in U.S. funds) to develop. On a per page (of final text) basis, it costs about $200 to $300 per page to create a major home study course which features audio, video and printed texts.

The expenses incurred come from:

- course manuscript writers, editors and printers
- artists and graphics experts
- learning media developers
- packaging experts

PHILOSOPHY OF TEXT DESIGN

Over the years, United States home study school educators have embraced some basic principles of course and text design. Important among these are:

1. The home study text is not like the typical resident school text; it must do more than just present lectures or information.
2. Home study courses must teach, explicate, cajole, anticipate questions and, in general, serve as teacher, facilitator, classroom mate, motivator and be the source of further information. Courses are targeted for specific kinds of people: mature, self-starting, goal oriented learners.
3. Good courses must come with "built in" readings, assignments, evaluative instruments and inspiration for students to continue. They must challenge the fast learners and still hold the attention of, and teach, the less gifted. A mix of media is important: audio cassette tapes, learning kits, job aids, as well as printed text are all used in combination. There is no use or dependence on broadcast radio or TV lectures in private school courses.
4. Home study courses must teach the essential, current body of knowledge, skills and attitudes to meet course objectives using media that are economically feasible and educationally effective for the intended audience.
5. Home study instructors serve primarily as evaluators of achievement and "responders" to technical queries. Their role as dispensers of information, "lecture givers" is minimal. Their role as tutors is less significant as compared to university independent study instructors. Their role as motivators of learners, via written or oral commentaries, is an important function.

SUGGESTIONS ON COURSE DESIGN

In the spirit of sharing with distance educators around the world the experiences American home study educators have had, we offer these suggestions. Hopefully, one or more of these ideas will be of practical help to those approaching the daunting task of creating a correspondence course:

1. Use a *"course development team"* — involve 3 to 7 experts in creating the course: Team Manager; Writer(s); Subject Expert(s); Editor; Designer; and Marketing Specialist would comprise a minimum team.
2. Set up a *budget* and a *schedule* — assign responsibilities for different functions — most courses take 12 to 18 months to develop.
3. *Perform a needs analysis* — examine the critical job/career tasks — create performance objectives based on the tasks.
4. Create a *course outline* — divide the course into learning units — select media (print being the base media for each unit) — assign learning objectives for each unit — match career tasks to course objectives.
5. Create *written text* — each lesson (i.e. learning unit) should result in the student coming to a sense of "psychological fulfillment" or mission accomplishment — most units should be completed by the student in 40 to 60 minutes, so that students can get up from their desks feeling they have "learned something" — vary the number of pages in each lesson, from 5 to 30 pages.
6. Make use of *illustrations* and *graphics* — use "sidebars", graphs, and instructional photos intelligently — as much as 40% of text copy should be illustrations/graphics — today's desktop publishing computer systems.
7. Create *functional exams* and assignments — require the student to solve real life problems and on the job situations — use realistic, job related assignments — match exam questions to the learning objectives — use self-quizzes throughout the text (every 5–6 pages of copy) — vary examination lengths — intersperse formal, written exams with projects which encompass more than one lesson's coverage.
8. *"Field test"* the course on a group of students whose demographic profile matches the intended audience for the course — fine tune the course using their comments — have them study the course at home *and* call in small groups of 4 to 5 of them for group interview sessions.
9. *Print and package the course* attractively — keep a unified theme in color, layout, binding, etc. — most United States courses are 8.5 by 11 inch photo offset, using 2 colors, half-tones and shaded side bars — most courses are saddle-stitched lesson booklets of 20–30 pages with a glossy, colorful cover — lesson booklets are shipped at pre-set mailing intervals and contain "how to study" sheets — never overwhelm the student with too much material all at once.

10. Offer *prompt, warm, creative service* for lesson assignments and exams — most United States institutions evaluate and return exams within 24 hours of receipt — most United States institutions offer a toll-free telephone service for students to call their instructors — most courses combine computer-graded exams with personalized instructor analysis and service.

CONCLUSION

One of the most successful and respected course developers in the United States today is Dennis G. Foltz, Director of Operations at the Gemological Institute of America, in Santa Monica, California, USA.

Mr. Foltz has stated:

"A home study course is not simply a bunch of lessons with examinations to take or projects to complete. It is a complex information delivery system, intended to meet a number of goals. Unless it is designed as a system, as a total package, it will not accomplish what you, and your students, want it to do.

The first step is to analyze the demographics of your prospective students. The more data you have about their age, gender, educational level, reading skills, and vocational experience, the better. Ideally, you should understand their dreams and aspirations, too. The more you know about the prospective students you are targeting, the more successful your planning, and hence your course, will be."

Well-designed home study courses will result in higher course completion rates and more effective learning for students.

BIOGRAPHICAL DETAILS

Ross Paul has been Vice-President, Academic, at Athabasca University
since 1980. He has a B.A. from Bishop's University, a P.G.C.E. from the University of London, an M.A. from McGill University and a Ph.D. in Comparative Education from the University of London. He has taught at the elementary, secondary, college and university levels. He is familiar (notorious) to past attendees of international ICDE conferences in Vancouver and Melbourne for his late night, satirical musical revues.

If student services are so important, then why are we cutting them back?

ROSS PAUL

OVERVIEW

There can be little doubt that distance education and open admissions policies have done much to extend accessibility to post-secondary education throughout the world in recent years. Too often, however, the responsibility inherent in this provision of educational opportunity to ensure that the "open" door does not become a "revolving" one receives insufficient attention.

Isolated home-study can be extremely difficult, especially for the part-time adult learner with other major demands on his or her time and energy and attrition rates are much higher than they are for campus-based institutions (Shale, 1982; van Wijk, 1983; Holmberg, 1982). While the issue of attrition rates in distance education is extremely complex (as discussed below), the evidence suggests that personal factors, such as changes in time available or in personal circumstances and major gaps between student expectations and the realities of homestudy are more important influences on a decision to drop-out than are such institutional factors as course design, course content and marks received (Woodley, A. and Parlett, M., 1983; Brindley, 1987).

At first glance, this sort of evidence would support a laissez faire attitude on the part of the institution, based on the premise that most of the factors are beyond its control. However, further analysis suggests that such key student support services as tutoring, counselling and advising can help students to overcome the difficulties inherent in homestudy.

The principal argument here is that the notion of the self-actualized adult learner perpetuated in much of the literature on adult and continuing education is more myth than reality and that the distance education institution bears considerable responsibility for helping its students to cope with the difficulties inherent in this mode of education. A strong argument for the retention and development of student support services, including tutoring and academic advising, is thus posed.

This is not merely an academic argument, for there is some evidence to suggest that such institutions tend to cut these first in times of fiscal restraint. It is submitted that such cuts are based more on political factors within the institution than on data which demonstrate that they are less effective than other academic provisions in responding to the needs of distance education students. An attempt is made to understand this and hence to suggest ways in which those involved in the provision of such services can make their case more effectively.

There may be several limitations to this position paper. It should be noted that many of the premises are based largely on experience at Athabasca, an open university providing educational opportunities to part-time adult students in Canada. It can be suggested that there may be a greater dichotomy between the academic and service sides in a university than there are in other ICDE member institutions but discussions with representatives of other milieu have suggested that the issues are widespread and characteristic of every form of educational institution involved in distance education. As well, Athabasca caters to part-time adult learners in the main and there may be important differences in commitment and attitudes towards academic work between full-time and part-time students. Finally, Athabasca's open admissions policies may yield a greater proportion of students lacking formal qualifications and basic skills than is the case in distance education institutions with more formal entrance requirements.

BASIC PREMISE: THE MYTH OF THE SELF-ACTUALIZED ADULT LEARNER

In its earliest forms, correspondence or distance education had a rather limited place in the education world. It received kudos for providing educational opportunity to isolated or disadvantaged learners but had a relatively low status. It survived and developed not only because of its successes but also because of the almost missionary zeal of some of its earliest practitioners, a zeal that led some adult educators to believe that distance education was not only the equal of any traditional system but that it was even preferable to classroom teaching.

For many early distance educators the well-designed course package was a sort of ideal, a "teacher proof" set of learning materials which would allow the student to learn in his or her own time and workplace. Some even carried this belief so far as to view it as inappropriate for a distance education institution to use face-to-face techniques at all because they were too expensive or they belied the very raison d'etre of the specialized institutions.

However, I would argue that the overwhelming experience of distance educators has been an increasing recognition that part-time adult learners, especially those at a distance, require all the personal support they can get if they are to succeed. While it is critical that such students have the support of family and friends in their academic endeavors, it is also submitted that the institution has important responsibilities to provide its own forms of support as well. In fact, an objective scrutiny of the following would suggest that student support services should be in the ascendancy at all distance education institutions.

THE CASE FOR STUDENT SERVICES

1. The notion advanced by earlier adult educators of the self-actualized independent adult learner is largely a myth to anyone who has had the experience of working closely with students in a distance education environment. Even experienced and previously successful students find homestudy a daunting challenge but the inherent difficulties of being isolated are exacerbated for those taking a home-study course for the first time, especially if they also have been out of formal education for a long time, lack basic literacy and study skills, are uncertain as to their educational objectives and/or blame themselves rather than the institution when they find the course work difficult or confusing. Whatever the variations in clientele among the various ICDE member institutions, few authors have perpetuated older notions of the "stand-alone" value of a course package in the face of overwhelming experience to the contrary.
2. Distance education is almost never "better" than face-to-face teaching for it faces a series of challenges unique to the distance mode of delivery which must be overcome:

a) ISOLATION OF THE LEARNER

The learner is typically isolated geographically from the institution and from contact with peers. On a traditional campus, upon leaving a bad or difficult lecture, a student receives immediate support from peers who also found it useless or confusing, whereas the isolated distane education student gets little such reinforcement and is apt to think that he or she is just not "smart"enough to understand a passage (which may be merely badly written or designed). The tendency for distance education students to blame themselves rather than the institution (Bartels, 198?) may make life easier for those working at the institution but it does little for their awareness of student problems.

This sort of isolation tends to exaggerate the poor self-concept of those who were uncertain of themselves to start with. It is very easy for an institution to be quite unaware of this, except by the number of its "non-starts", students who drop out before doing very much at all in a course.

Without scheduled classes the student may not be able to get the support services just when he or she requires them. Athabasca University has an elaborate network of telephone tutors for each course but a frequent problem is that a tutor is not readily available just when the student is ready to deal with him or her; conversely, the tutor may contact the student when he or she is preoccupied with personal or family concerns.

Another basic problem, identified by Cross (1981) as the critical one for the part-time adult learner, is basic information — simply knowing what the rules are and what services are available. Even when an institution has a wide range of support services for students, many may not avail themselves of them because they are unaware of their existence.

Finally, "informal" learning of the sort which takes place in common rooms, cafeterias, in residences and pubs is less readily available in distance education, especially if the homestudy student does not attend study sessions or have a supportive network of family and friends.

b) REIFICATION OF KNOWLEDGE

Distance education is supposedly non-traditional and innovative, and yet there is a considerable case for suggesting that it can be extremely conservative. It may perpetuate the worst of traditional rote learning, encouraging students to regurgitate what has been presented rather than really thinking the materials through. There is a certain tyranny to the printed package, its slick design perhaps giving false credibility and permanence to its contents.

Another disadvantage of the printed homestudy package is that it cannot so easily be adpated to the needs of a particular learner or to accommodate new knowledge. Whereas the volume of course content is frequently cut back during the year by a professor who has underbudgeted the time or found that his students cannot cope with the volume and pace, this almost never happens in the distance education setting where the course is the same for every student.

One of the most frequent student complaints, despite the best efforts of instructional designers, is that distance education courses are too long and that one has to work twice as hard as required at a traditional university to achieve the same credits. One way of combatting this would be to give more powers to course tutors to modify courses or to set "local" examinations but, typically, they are not given such powers out of concerns about maintaining the integrity of course design and protecting the academic credibility of the course through centralized examinations and marking.

While distance education makes particular demands on a student's time management and study skills, it may not provide him or her with sufficient opportunity to acquire and develop such basic academic skills as library research or learning how to advance an argument in a seminar.

c) PERSONAL CONSIDERATIONS

The literature on "drop-outs" and course completion rates in universities, adult education centres and distance education institutions overwhelmingly identifies personal rather than institutional factors as being the critical ones in determining a student's success or failure (see, especially, Bean and Metzner, 1985). This is contrary to those identified for young, on-campus, full-time students where the emphasis is on the individual's ability to adapt to the social and academic demands of the institution (see, for example, Spady, 1971; Tinto, 1975; and Lenning, Beal and Sauer, 1980). In fact, it is easy to conclude from a scrutiny of research in this area that what the institution does can make very little difference to student persistence and success if it merely focuses on academic and pedagogical considerations.

While research by Brindley (1987) has emphasized the importance of such personal factors as "changes in time available/personal circumstances" and "students' personal realizations about the course" as the critical variables in a distance education student's decision to drop-out, her findings have also challenged the notion that the institution cannot do much about such factors.

In particular, she found that while changes in personal circumstances and/or time available were the critical incidents most frequently reported by distance education students (and over 90% of these were "hindering" rather than "facilitating" incidents), course completers reported these almost as frequently as non-completers (Brindley, 1987, p. 84). In other words, both the completers and non-completers faced similar difficulties in trying to learn at a distance but the major difference appeared to be in the ways with which the two groups coped with them. This suggests the need for more interactive models of attrition, but it also contributes to the notion that students can be taught coping skills and strategies and hence it reinforces the need for student support services.

d) GAP BETWEEN STUDENT EXPECTATIONS AND REALITIES

A phenomenon that has received particular attention at Athabasca University is the "non-start", a student who enrolls in a course, does not withdraw within the formalized "withdrawal" period but never completes an assignment, quiz or otherwise participates in the course. An overwhelming percentage of the university's non-completers fall into this category (AU TRENDS #4). While many rationales have been suggested for this non-start problem, including poorly designed first units, insufficient provision of positive feedback early in the courses and unreasonably demanding courses, attention has focused more recently on the gap between student expectations for homestudy and what they actually face when the course package arrives. This includes such concerns as ensuring that students have a well-informed sense of the demands on such basic skills as time management and study habits which distance education makes, the need for better academic advising and programme planning and a number of other services typically provided by student services units. This gap between expectations and realities can have serious consequences — a recent Athabasca University study (Conway and Powell,

1987) found that students took far fewer distance education courses than they had intended when they first entered the institution.

e) STUDENT IDENTITY

Another often overlooked factor is the relatively small number of students for whom their identity as "student" is first priority. Many of the students may not be interested in programmes or in completing credentials and their "student" identity may be relatively minor compared to their roles as worker, parent or homemaker. This contrasts with the full-time undergraduate fresh out of high school for whom "university student" is almost their exclusive label for the duration of their stay on campus. This is not to suggest that the part-time adult student is less important in any way but simply to note differences in the relative priorities attached to formal learning by these two categories of students.

f) UNDERSTANDING THE INSTITUTION

While distance education institutions are dedicated to overcoming the barriers which have previously prevented students from gaining access to formal education, they also create barriers of their own. In particular, students may find the modes of operation, from initial registration and course selection through the various non-traditional delivery options, strange and confusing. Student services units can play a critical role in assisting students to overcome these, through effective information, orientation and advising roles through a host of programmes offered in regional centres, over the telephone, through regional seminars, by correspondence and through the imaginative application of newer, more interactive technologies. A student's first contact with the institution is a critical one and it will usually be with a regional office, student services, the registry or a tutor. The quality of service received will usually play a critical role in that student's subsequent success in pursuing a homestudy course.

g) THE AFFECTIVE DOMAIN

By definition, course materials focus on academic content and hence there is usually a strong separation between the cognitive and affective domains in homestudy courses. This places an extra responsibility on the course tutor, who is usually chosen exclusively for his or her academic credentials, to respond to personal concerns as well. Effective student workshops and a referral system to counsellors organized by student services can greatly assist students and enable the tutors to concentrate on the teaching role for which they have been engaged.

h) COMBATTING GEOGRAPHIC ISOLATION

An effective student services unit can complement the use of innovative delivery modes and technologies in combatting the geographic isolation faced by so many students. Regional centres, travelling tutors and counsellors, regional workshops and self-help orientation and learning materials are important additions to the basic course package provided by distance education institutions.

i) FINANCIAL AID

While distance education in itself helps students to afford their post-secondary studies by allowing them to study while working or bringing up a family, student services can assist students further through the provision of financial aid services.

j) STUDENT ADVOCACY ROLE

Homestudy students are usually isolated from each other and have very little power to influence decision-making or to plead a particular case in a distance education institution. It is vital that student services provide a strong student advocacy service, both in assisting students to organize their own associations and in taking up student causes, both individual and collective. This role also involves bending the rules on occasion to serve the needs of a particularly disadvantaged individual student, a role which may lead to conflict with other units in the institution (notably the registry).

WHY CUT STUDENT SERVICES?

Given the above analysis, it would be logical to conclude that institutions involved in distance education would increase the proportionate share of resources in student services, counselling, regional offices and tutorial support as they gained more experience in dealing with part-time adult learners at a distance. In the author's experience, this happens to some degree but more as a part of the following cycle of development which seems to be repeated in new institutions of distance education as they develop.

When a new distance education institution is established, student support services are usually secondary to establishing the basic course development and delivery systems. Since one of the principal arguments in favour of such institutions is their relative cost efficiency in reaching out to disadvantaged students, it is not surprising that more expensive, face-to-face services receive lower priority. Typically, however, the experience of trying to serve isolated learners through distance education leads to the introduction or improvement of such support services as telephone tutoring, counselling and advising and regional centres. This trend is reversed, however, when the institution faces tighter fiscal times and pressure increases via formal evaluation to demonstrate conclusively that the respective services are both cost efficient and effective in increasing student success. Indead, while the trend may not yet be dramatic, there is considerable evidence to suggest that the more established distance teaching institutions are cutting back on student services as they face tighter budgets in the late 1980's.

If the case is so strong for the adult homestudy student requiring personal and professional support services, why are student services one of the first areas cut when distance education institutions face tighter budgets? My own analysis would focus on the politics of decision-making within a university or college.

1. As already noted, there has been a tendency to separate the cognitive from the affective, the former being emphasized in the early development of most institutions and the latter gaining prominence when student success has fallen belo expected levels. However, the strong traditions of universities for research and scholarship have ensured that priority status accrues to the academic staff, those closest to the traditional role of contributing in the "helping" or "service" areas.
2. The relatively lower status of student services may also have been affected by the predominance of women in counselling roles, given the traditional difficulties faced by women-dominated occupations in achieving full professional status (e.g. school teaching, nursing, social work).
3. Faculty members, who tend to be the most powerful political group within an institution (with the possible exception of the senior administration), may be less sensitive to the personal and skill development needs of part-time adult students, given that the great majority of them completed their degrees on traditional university campuses on a full-time basis and were successful students who faced far fewer academic problems.
4. Marketing and promotion materials for distance education institutions tend to play up the convenience to students who can study in their own time and in their own place. As a consequence, far too many students enter these institutions with very little idea of what homestudy entails and what demands it makes on the individual's skills and fortitude. If it is to be effective in preparing students better for what they will face, it is incumbent upon student services personnel to do everything they can to expose students to the realities of homestudy. This "reality therapy" may sometimes lead such staff to be quite critical of the institution in a manner which may not be very compatible with advansing their political case in the institution.
5. The aforementioned student advocacy role, while crucial, has its pitfalls for student services as well. Advocating the cause of the individual frequently runs up against academic policy and is often perceived as threatening the standards and hence the academic credibility of the institution's credentials. This tends further to increace the gap between student services professionals and the academic faculty.

The senior administration can play an important balancing role here but deans and vice-presidents typically are products of the academic ranks rather than student services and their loyalties tend not to lie with the latter.

The student advocacy role is also rendered more difficult by the relative absence and isolation of the students themselves. Even where student representatives sit on sector councils and other important academic bodies, they tend to be disadvantaged by their lack of familiarity with the staff and the almost impossible task of trying to represent thousands of students whom they can never hope to meet. Even where they do successfully take up a student cause, their ability to represent student views may easily be challenged, given the difficulties faced by student representatives in this regard and given the absence of student advocacy groups to support them.

WHAT ACTIONS CAN BE TAKEN?

The problem for student services staff in a distance education institution has been presented with a kind of inevitability thus far in this paper. Relatively low status and political power have been portrayed as built-in factors in a college or university and the implication has been that student services staff attempts to change this would be rather futile.

Without denying the power of some of these forces, I believe that a great deal can be done to redress the balance more in favour of student support services. There are a number of potential strategies which can be employed, although their relative effectiveness will vary considerably according to the local context:

1. INTEGRATION OF ACADEMIC AND STUDENT SERVICES

One strategy is to amalgamate academic and student services units, so that each faculty, for example, has its own registry, advising and counselling and tutorial services. While this can lead to better informal contact among academic and professional staff, it may be less cost effective (if student services staff are spread among a large number of faculties) and it can undermine the development of strong professional identities and collegial relationships within student services by isolating the staff from each other. As well, academic (in the narrowest sense) concerns will usually take priority in the faculties and the relative distribution of resources to student services may decline over time. That this strategy is more frequently voiced by faculty than student service representatives is often seen by the latter as evidence of a desire tc assimilate rather than integrate student services into the academic programme.

2. STRONGER ACADEMIC PROFILE WITHIN STUDENT SERVICES

This strategy addresses directly the criticisms of faculty members by placing a much higher priority on the credentials of student services staff (masters and doctorate degrees) and by encouraging such staff to conduct and publish more research. This is a double edged sword, however. Student services staff with doctorates and a strong research orientation may be less willing (or have less time) to do the more mundane information and advising functions on which so many students depend and the quality and quantity of basic student service may decline while individual members of the staff are enhancing their individual academic credibility. There is considerable danger of a displacement of goals here, where the means (research and scholarship) become ends in themselves at considerable cost to the primary student service mandate of such a professional unit.

3. A MORE POLITICAL ROLE FOR STUDENT SERVICES

One crucial response is for deans and directors of student services to pay more attention to the political aspects of the university. Too often, student services staff are naive politically, expecting their arguments to prevail simply because they are on the side of the student. Student services staff should develop close relationships with political leaders and lobby actively for their causes. They should also develop programmes which are directed at problems which faculty members themselves have identified, such as poor student writing skills, inadequate "front-end" advising and low completion rates. They can also influence faculty opinion through institutional research which identifies major student concerns and inadequacies in the university's provisions, provided they don't advance these primarily as criticisms of faculty practices — in other words, the way in which such research is presented is probably as important as the results themselves in influencing subsequent faculty and aministrator actions.

Concerns about encouraging prima donnas more interested in research than student advising should not dissuade student services units from going after the best qualified staff or from pushing existing staff to upgrade their skills. Professional staff who are well qualified in their areas of expertise will have more credibility within the institution and ultimately contribute to the advancement of their services.

In making this presentation, I should admit to some prejudices myself in this area. I am an advocate of student services because I believe that distance education institutions are doing worse than a mediocre job if they encourage adults to return to formal education only to leave them to experience yet another failure and hence to do them a greater disservice than would have been the result of not serving them at all. At the same time, my primary responsibility for the costs of academic services often places me in the position of limiting expenditures in support areas and I am thus forced to recognize the limitations and constraints on the university's role. One notable example is extensive personal counselling with students — counselling resources are limited and should not be dedicated to helping the very few who have serious personal problems beyond the scope of the educational institution. Surely the answer here is to refer such students to more specialized agencies and to apply the counselling resources to issues directly affecting the clients as students. In the film *Educating Rita,* the power of an education on an individual's life chances was clearly demonstrated but there must be limits to the institution's responsibility to then help the individual solve his or her consequent personal trauma. There are other agencies for that and the counsellor's role should normally end at educating the student about these and/or making referrals.

Being more "political" should not be interpreted in the narrow partisan sense. At least superficially, a university places a high premium on the results of research and it is important that Student Services units work actively to test and to demonstrate the effectiveness of their services. The relative lack of long-term experience with distance education is never more evident than from the paucity of research on its effectiveness. Research has taken on a much higher profile among ICDE members in very recent years, however, and it is to be hoped that a great deal more empirical evidence will be presented in Norway than has been the case at previous international conferences. Among the issues which require much greater and more rigorous scrutiny are the impact of such student support services as telephone and personal tutoring, counselling and advising on student success and persistence. In addition to conducting and publicizing such research and to using it in decision-making about what services to offer, Student Services staff also have a responsibility to articulate better the rationale for their services and how they advance the mission of the particular institution. Their case is a good one but they need to improve their ability to convince students, faculty and administrators.

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Women in distance education

CHRISTINE VON PRÜMMER,
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STRUCTURE:

1. Introduction.
2. Equality and Respect: Some Implications for Distance Educators of Taking Gender Seriously
3. Equal Opportunities for Women? Gender in Relation to Access and Continued Participation.
4. Two Steps Forward, One Step Back: Gains and Setbacks for Women at the Open University in Britain.

1. INTRODUCTION

This contribution on "Women in Distance Education" is concerned with the issue of gender and with some of the ways in which this issue affects both students and staff at distance teaching institutions. Gender must be seen in broad contexts, some of which are mentioned here to illustrate the point:

- As far as *students* are concerned, one of the most important issues facing distance teaching institutions is the attrition rate and the problem of identifying factors which might contribute to either continuation or drop-out. Research has shown that women have higher drop-out rates than men, i.e. they are more affected by factors working against continuation.
- As far as *content and presentation* of study material is concerned, questions have been raised as to whether women could — and should — be attracted into fields which are traditionally considered the domains of men. And, if so, do the contents of these courses and the way they are presented have to change in order to reflect a more general, non-sexist approach? What is the place of women's studies and feminist research in distance education and how can equal opportunity programs affect it?
- As far as the *study system* is concerned, the mode and organization of teaching affects women and men in different ways. For instance, women, more than men, prefer to study in groups and have contact with other students and with staff. A study system which contains more elements conducive to shared learning situations would thus be more suited to the needs of women and might serve to attract more female students to participate and to persevere, while a system which relies more on isolated, totally "independent" learning tends to deter women. Another instance of developments which adversely affect women's participation is the indiscriminate introduction of information technology which often is inaccessible to women.
- While the issue of gender affects women everywhere, it takes on additional relevance for women in Third-World countries. For one thing, gender effects might be more marked due to the overall economic conditions and the organization of the educational system. In addition, the traditional roles of women in society might make their participation in distance education even more difficult.

The following sections cover some aspects of the gender issue in more detail. They are intended to raise questions about the effects of gender on individuals and institutions in the field of distance education and to provide some ideas as starting points for finding solutions.

2. EQUALITY AND RESPECT: SOME IMPLICATIONS FOR DISTANCE EDUCATORS OF TAKING GENDER SERIOUSLY

Jane Thompson, in her feminist critique of adult and continuing education (Thompson 1983:106), argues that

"Unless women think much more deeply about themselves, make sense of their experience and expectations in reference to their own needs and interests, and consider strategies for redefining the relationships with men in ways which will change the distribution of power and oppression to one of equality and respect, learning new roles will continue to be a poor substitute for the practice of freedom and liberation."

These are not comforting words. Those of us distance educators who are also adult educators are probably more at home with notions like facilitating learning, building confidence in the learner, meeting needs, and starting where the learner is. Thompson's point, however, in chorus with a burgeoning number of feminist educators, is that in order to make these notions real for women — who constitute the majority of learners in most of our institutions — we must free ourselves as well as our students from male-centered notions about how adults learn, what content adult learners need and what kinds of structure and support most effectively facilitate their learning.

First, how do adults learn? Until recently, answers to that question have been based on how men learn. The authors of the major theories of human learning and intellectual development have been men and, as Carol Gilligan (1979) has pointed out, women have been missing even as research subjects. In a ground-breaking study, Gilligan (1982) listened to girls and women resolve serious moral dilemmas in their lives. The development she traced as she listened was of a morality organized around notions of responsibility and care, in sharp contrast with the morality of rights described by Piaget (1965) and Kohlberg (1981, 1984), which is based on the study of moral reasoning in boys and men. In an equally significant study, four women psychologists (Belenky, Clinchy, Goldberger, Tarule 1986) also listened to women, diverse in age and ethnic and socioeconomic background, as they talked about what was important about life and learning. On the basis of what they learned and building on Perry's (1970) scheme of epistemological positions, Belenky et al. grouped women's perspectives on knowing into five major categories:

"silence, a position in which women experience themselves as mindless and voiceless and subject to the whims of external authority; received knowledge, a perspective from which women conceive of themselves as capable of receiving, even reproducing knowledge from the all-knowing external authorities but not capable of creating knowledge on their own; subjective knowledge, a perspective from which truth and knowledge are conceived of as personal, private and subjectively known or intuited; procedural knowledge, a position in which women are invested in learning and applying objective procedures for obtaining and communicating knowledge; and constructed knowledge, a position in which women view all knowledge and value both subjective and objective strategies for knowing." (Belenky et al, 1986:15).

Unlike Perry's scheme, that of Belenky et al. is not structured as a hierarchy of stages. Many of the women who participated in the study shifted from one mode of knowing to another at points in their lives. Belenky et al., however, leave the questions of why and when and whether these modes have any "stage"-like qualities to future work.

Even at this stage of their work, however, the ways of knowing mapped by these four women have important implications for distance educators. In their chapters on "Toward an Education for Women" and "Connected Teaching", Belenky et al. draw out some of the implications these categories have for the classroom. They argue, for example, that in designing education appropriate for women, we need to begin by asking, "What does a women know?". This may sound like the adult education dictum of "start where the student is". However, if the student is female, our "start" will take us to the very foundations of whatever disciplines we are teaching and require us to redefine the questions we ask and seek new answers rather than simply select whatever existing questions and answers we decide are most relevant. In the words of the researchers (Belenky et al. 1986:198).

"Traditional courses... are about the culture's questions, questions fished out of the 'mainstream' of our disciplines. If the student is female, her questions may differ from the culture's questions, since women, paddling in the bywaters of the culture, have had little to do with positing the questions or designing the agendas of the disciplines."

What does this listening, questioning and seeking behaviour entail for the teacher of women? It means, for one thing, creating an open learning climate, in which the teacher respects the student's own rhythms and agendas rather than imposing an arbitrary timetable on her learning. In some ways distance education is better able to provide this climate than is any other mode since most distance learners are allowed within relatively flexible limits to learn at their own pace. At the same time, however, there must exist a network of support, consisting of teachers who are "partners" rather than "bankers" in the learning process. In Freire's terms, partner-teachers treat knowledge as something to be shared with students, whereas banker-teachers deal with it as the teacher's property, to be deposited in student storehouses (Freire 1971). Belenky et al. use the term "midwife-teacher" to name the required role: "Midwife-teachers draw (knowledge) out. They assist the students in giving birth to their own ideas, in making their own tacit knowledge explicit and elaborating it." (Belenky et al. 1986:217).

The medium Belenky et al. propose for this process is the "connected class" in which participants can nurture each other's thoughts to maturity. The question this poses for distance educators is how to create "connected" classrooms at a distance. Fortunately, as creative and innovative folk, distance educators have already developed and are using a great number of strategies which can put the necessary connections in place and make them work in the interests of women.

For example, programs and courses exist which incorporate the learners' own experiences and knowledge as valid and build on them. Competency-based approaches are one instance of this kind of course. Women's Studies courses are another. In Women's Studies courses, as Thompson points out (1983:116), "the learning is controlled by women, not men, and that which is regarded as useful, crucial and important knowledge comes first from women's own experience of the world." As another example, several open and distance education institutions offer (and some prescribe) interdisciplinary courses. Women's studies courses are by definition interdisciplinary reflecting the women's movement's fight for wholeness (ibid.), the desire to make connections between knowledge drawn from different disciplines rather than to continue to isolate it within specialties.

Distance educators have also developed a multitude of ways for providing learners and personalized support and evaluation. Trained tutors and counsellors nurture and confirm rather than censure, seeking to understand the mode within which an individual learner is operating and helping her break out of the silence, for example, if that is where she is trapped. In addition, personalized marking schemes exist, certainly but not exclusively in Women's Studies courses, in which a learner's progress is measured in terms of individual growth rather than competitive position with others.

As for creating opportunities for learners to meet, share and struggle not only with teachers but also with other learners and their ideas, distance educators use whatever means are at their disposal. At the very least, teachers and learners can meet by mail and, where population density and means permit, in study centres and summer schools. When available, a variety of more sophisticated technologies are employed, including telephone and teleconferencing, interactive broadcasting via satellite and computer conferencing.

When all these components are combined — courses which confirm and build the learner's competencies as a knower and help her make connections, support networks which nurture rather than censure and opportunities to meet, share and struggle together — the result is the empowerment of women to "think deeply about themselves, make sense of their experience . . . and consider strategies for redefining the relationships with men in ways which will change the distribution of power and oppression to one of equality and respect . . ." The means exist. What is needed is the will on the part of distance educators who take gender seriously to ensure that they are used.

3. EQUAL OPPORTUNITIES FOR WOMEN? GENDER IN RELATION TO ACCESS AND CONTINUED PARTICIPATION

Distance education is supposed to be especially suited to meet the needs of people who, for various reasons, find it difficult or impossible to attend traditional institutions in order to obtain their formal education. Apart from factors such as distance, health, or employment, there is one obstacle which exclusively affects women's access to education: they are held responsible for raising children and for taking care of their homes and families. This hinders access to formal education in different ways. Firstly, on ideological grounds, it may prevent women from obtaining higher levels of education and professional training as it is assumed that they "don't need it" for their future as wife, mother and homemaker. Secondly, on practical grounds, it may prevent them from attending classes and pursuing formal programs of education as their schedule is determined by the needs and wishes of their families and time for "extraneous" activities is severely curtailed and not freely disposable.

Distance education, which allows for a flexible study schedule and does not require attendance at fixed times and places, would therefore seem to be ideal for women who wish to pursue higher education at a later stage in life. Why then do enrollment statistics not necessarily reflect this?

In West Germany, for instance, only one in four distance students is a woman while the proportion of women in traditional universities is about forty per cent. Among the newly matriculated students at the West German FernUniversitat (Distance University) women comprise a slightly higher percentage but even in this group only three in ten students are female. Thus women are extremely underrepresented in terms of access and even more so in terms of continued participation.

As far as access is concerned, there are various factors which adversely affect women's enrollment as distance students. At the FernUniversitat one of these is the fact that the available degree programs are predominantly offered in areas traditionally preferred by men and that women are not systematically encouraged by the institution to enter these fields. Another factor seems to be the cost of distance studies which discourages especially those women who are less interested in completing a formal course of studies but wish to register for individual courses rather than studying for a degree. This could be due to the fact that women, who often have no income of their own, frequently are entitled to only a small share of the family income and have little or no right to dispose of it on their own. A third contributing factor is the double or triple workload women would have to take on if they decided to become students on top of their family commitments and, possibly, their paid employment.

While barriers such as these serve to keep women's enrollment in distance education at a comparatively low level, there are additional factors which mitigate against their continued participation.

For instance, distance education is often equated with individualized learning and this, in turn, often means isolated learning. Recent research, however, has shown that women, more than men, prefer to work with others and to have contact with fellow students and with members of the teaching staff. Thus they are more interested in the availability of study centres and study groups where their needs for interaction, both on academic and personal levels, can be met. At the same time, women find it more difficult to avail themselves of these facilities since they often lack the time and the money, or are prevented by other commitments, to travel to study centres for meetings or tutorials. It is therefore not surprising that women, more often than men, give the lack of communication and contact with others as a reason for discontinuing their distance studies.

These findings pose a challenge to distance education institutions in the sense that an increased and continuous participation by women requires the resolving of a seemingly inherent paradox: enabling women to learn in groups, facilitating face-to-face interaction between students and teachers while at the same time providing individualized and flexible teaching and education at a distance.

One factor which causes students to discontinue their distance education is the initial misjudging of the required time and workload on the one hand and the available spare time on the other hand. At first glance this affects both women and men but closer analysis shows that women are experiencing distinctly more pressure than men because they are not only affected by work commitments but also by their parenting and homemaker responsibilities. For men, changes in their jobs, transfers, promotions and new or broader career responsibilities are the single most relevant factor in their decision to slow down or discontinue their studies at the FernUniversitat. For women who are in paid employment these are important factors as well. But in addition, women — whether they are solely unpaid homemakers and carers or also in paid work — have to find the time to meet the needs of their families and to respond immediately to private changes and to crises at home. In most cases the priorities, which are prescribed by tradition and not easily negotiable, are clear and conflicts of interest have to be resolved in favour of firstly the woman's family, secondly the woman's paid employment and lastly the woman's personal, educational or other needs and interests.

In view of these circumstances it is not so surprising to see that more women than men discontinue their studies. Rather it is surprising how many women manage to complete their degree courses successfully. One of the reasons for this might be the fact that the women among the FernUniversitat's newly matriculated degree students are decidedly more goal-oriented than their male colleagues. This suggests that only women who are determined to obtain the degree manage to get past the access barriers and enrol in a degree program.

A distance teaching institution, one might assume, must be interested in attracting such highly motivated students and in providing them with the means and the environment conducive to successful studying. And while the University itself has little or no influence on the employment-related pressures and constraints, it is not so limited in the influence it might exert over the students' private environment and resources. Given the necessary funding and the setting of priorities, a distance teaching university could support its women students in a variety of ways such as childcare, travel, financial assistance, study material and equipment, organizational measures, etc.

As we have shown, these measures would primarily benefit the women among the student population and would ultimately contribute to lower attrition rates and, possibly, to higher levels of female enrollment. Thus it might also help to resolve a second, seemingly inherent, paradox of distance education: the discrepancy between women's initially high goal-orientation and their low continuation rate.

4. TWO STEPS FORWARD, ONE STEP BACK: GAINS AND SETBACKS FOR WOMEN AT THE OPEN UNIVERSITY (OU) IN BRITAIN

There are at present more initiatives to benefit women students and staff at the Open University (UK) than there ever have been, as I will go on to describe. However, each of these, for various reasons is very vulnerable to being undermined by factors both inside and outside the university. We cannot afford to relax. As countries like the UK go through economic and ideological change, changes in the policies of central government as well as an antifeminist "backlash" can undo the educational gains we have made for women. Internationally we need to discuss what new initiatives could be most productive *and* how best to defend what we have.

The OU initiatives have been characterised by their fragmentation — that is only one of them is a University wide initiative — and by their reliance on energetic women (often junior members of staff), developing them on top of already onerous workloads. The one University wide initiative is an Equal Opportunities motion passed by the Senate in 1987 which demands that the University adopt policies for equal opportunities in employment and increases the recruitment and provision of services for students from racially, socially and economically disadvantaged groups. Women, although not specifically mentioned, should fall into more than one of these disadvantaged categories. It also recommended that these policies are monitored. Unfortunately, in a large organisation such as the Open University, working out how to do all this is like dancing through a minefield.

The first thing to happen in the Open University has been that the motion has been split into issues dealing with students and those dealing with staff. Work on recruiting and supporting students in academic areas where there are few women staff suggests that the two issues are closely bound. Student issues have been debated at a committee on Student Progress and comments have been requested from all the faculties and units across the University. The staffing side of the motion is being taken up by other appropriate committees.

The motion has been welcomed by all of us working on women's issues. Many other UK institutions have designated themselves "Equal Opportunities Employers" and have had a policy in place for some time. However, the eventual policy adopted by the University could be either in a strong form, which would mean employing people with special responsibility to promote and monitor the policy and to train all staff in carrying it out, or a weak form which would be no more than a statement of intent. Obviously we would prefer the strong form which means that we are at the beginning of a long struggle since the idea of positive discrimination, quite legal in some aspects of training and education is seen as an attack on the whole liberal ethos of Open Access, itself a corner stone of the University's philosophy. In the immediate future the University again faces financial economies and increased resources for training and staffing will be hard to get.

The Senate motion came initially from a Social Science group called the Equal Opportunities Group. Until now individual faculty initiatives have been much more common. Most of the faculties have a group which has the interests of women staff and students of that faculty as a main priority. And each group has had some success. The Equal Opportunities group managed to get money from the faculty to pay for a consultant to come and examine the employment within the faculty.

Two of the longest running groups have been the Equalities Working Group in the School of Education and the Women into Science and Engineering (WISE) group which, although housed in the Technology Faculty, draws members from the faculties of Science and Mathematics.

One of the first things the Equalities Group did was examine course material for sexist bias and produce a video compilation of bad examples from Open University TV programmes. Since then they have functioned as a pressure group within the faculty on a number of issues, as well as supporting the development of modules of Masters courses that deal with the study of gender in education. Courses specifically addressing the needs of women students and taking feminist scholarship seriously have existed for some time in the University. The first Women's Studies Course, The Changing Experience of Women, was first presented in 1983. It is still being presented but is a very old lady. The course team has been producing plans for a replacement course but has staffing problems. The course is, as are most Women's Studies courses, interdisciplinary. As the University tries to make financial savings by not filling posts, faculty priorities are for mainstream faculty courses. Potential members of the new Women's Studies course are having to make time for it out of their mainstream activities. Sadly the effect of all this has been to make the course team and the course very insecure.

When the WISE group was formed there already existed a special bursary scheme funded by a central government body, the Manpower Services Commission (MSC). This had been developed by a woman member of staff who at the time was in part-time employment in a regional office. The scheme has so far funded nearly 350 women to study courses in technology or science for retraining purposes. 95 will be studying in 1988. It has been one of the most successful initiatives in this area. However, it is at the moment under threat because the MSC has adopted new criteria for the success of such schemes, namely that the women on them should have jobs in the *private* sector three months after the completion of the course. This ignores the fact that many women are studying in areas of high unemployment and, because many have husbands and children, they have not the mobility to follow jobs. It also ignores the fact that women in general are overly represented in employment in the *public* sector, which for MSC purposes will not count. Every year there have been a number of teachers on the scheme who are retraining to enter teaching in technology. It would be to the advantage of the scheme not to take these women any longer. For many women the scheme has set them off on a longer course of professional training so that it is a couple of years before they are in full-time employment. It will be to the scheme's advantage in future to discourage women from further education. This is a case where central government policy in attempting to make training more directed towards specific areas of employment, could end up closing a very successful scheme because of its unwillingness to recognise that male and female lives, employment patterns and therefore training needs are different.

A new women's course in management, Women into Management, is faring better. The MSC funded the production of the materials for this course, and funded some pilot students for the first year. Now the course is for sale and has high registration figures. Unfortunately it is expensive (£100). The course team are still trying to work out ways in which funding can be found for one of the groups of women for whom the course was originally designed: women who could not convince their employers that they would make good managers and who could consequently not get funding for management courses. Getting funding for women to come on courses remains problematic and will do as long as the measure of a woman's income is "the family income". Although research has shown that the income of the male wage earner is not equally available to all members of the family, special financial award schemes like that of the Open University work on the principle that they are.

New developments in distance education can also indirectly attack the gains we have made. For example in the last ten years the proportion of women on the first year technology course has risen from 14% to 24%. But in 1989 it will be compulsory for students on this course to use a microprocessor for a significant amount of their work. It is argued elsewhere in this conference that the increased use of information technology by students in distance education could, for a variety of reasons, significantly discriminate against women. Groups, such as WISE, have spent time trying to get this argument accepted, with some success. But they are now having to suggest changes to the policy for the distribution and use of these machines to alleviate its effects. We are facing an attitude that accepts such technical innovation as inevitable for the future of distance education, and in many cases regards the effect on women as also inevitable: the price of progress. For us progress is no such thing if it does not include progress for women as much as for men.

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Economics in distance education: time for a change of direction?

GREVILLE RUMBLE

My central thesis in this paper is that the study of the *cost structures* of distance education from an economic point of view is now a closed field of enquiry. I do not mean to deride the results that have been obtained: they were and are illuminating — and all those concerned with distance education should be aware of the findings. Furthermore, the fact that the field of enquiry is closed, in the sense that the conceptual and methodological questions have been solved, does not mean that further studies should not be undertaken. They will tell us something about particular distance education institutions, but they will not tell us much more about the fundamental nature of the cost structures of distance education as compared with traditional forms of education.

I am not saying that the application of economics to the study of distance education is no longer a valid activity. The study of the social and economic rates of return on investment in distance education seems to me to be a field which we have scarcely touched as yet. Of course, it is a field fraught with conceptual and methodological problems, but asking whether the investment of private or public funds in distance education is worthwhile is a valid activity — particularly where one is trying to measure the rate of return not in commercial terms but in terms of the value of the social and economic return to the nation. Commercial correspondence and distance education systems have it easier — they at least can measure their rate of return in terms of their profit margins. Firms who invest in distance education as a means of training their workforce — and there are now many of them — can measure the rate of return to their businesses through the direct impact of the training on their workforce. But it is much harder for the State to decide whether the investment is one which it should make. This, however, is not a theme that I shall explore in this paper.

My thesis is more prosaic: that distance education institutions have to look to their financial and budgetary management if they are to survive in a world which increasingly expects educationalists to provide more for less.

LESSONS FROM THE ECONOMIC STUDY OF THE COST STRUCTURES OF DISTANCE EDUCATION

It is said, particularly by distance educators, that distance education is cheaper than traditional forms of education. This is usually a short-hand way of saying that the cost per student or per graduate is less in distance than in traditional forms of education. Since students can progress at different rates (either full-time or part-time) the cost per student is often expressed in a standard measure such as the cost per full-time student equivalent. Sometimes the measure of comparison is the cost per student hour. The latter is particularly useful when one comes to measure the relative costs of individual media.

Cost comparisons between distance and traditional educational systems are often difficult to make because the systems may have different objectives or teach different subjects, or the same subjects in very different ways; the previous educational qualifications of the students entering the systems may be different, and this may affect their success in producing graduates; and the quality of the teaching may be different. Any one of these variables may affect costs and the way we view them. Generally, however, cost comparisons are confined to institutions teaching at the same level (primary, secondary or tertiary) and it is assumed that the quality of the education offered is similar.

Distance education systems are not set up just because they are believed to be cheaper. Still, cost is an important factor. The Organising Committee for the Venezuelan Universidad Nacional Abierta stated its belief that the institution would "contribute in significantly reducing the annual cost per student and the social cost per graduate" (COUNA, 1979). Unfortunately the hopes of politicians and planners are not always realised. There are examples of distance teaching schemes where the cost per student or cost per graduate, and sometimes both, have been higher than costs in traditional systems doing comparable tasks, just as there are plenty of examples of distance teaching systems which have been cheaper (Perraton, 1982).

We know a great deal about the economics of distance education. The early studies by Laidlaw and Layard (1974) and Wagner (1972, 1977), and the criticisms of the case made for the relative cheapness of distance education advanced by Carnoy and Levin (1975) and Mace (1878), said virtually everything that was important in terms of the economics of distance education. If I can summarise their findings in a few words I would say that their message was as follows:

(1) The cost structures of distance and traditional forms of education are different. Distance education systems generally have high fixed costs and low variable costs, whereas traditional forms of education typically have low fixed costs and high variable costs. As Wagner (1982:ix) put it, distance education offers educationalists "a mass production alternative to the traditional craft approach".

(2) This high-fixed low-variable cost structure is typical of both the institutions offering distance education and individual courses.

(3) Distance education systems need a high level of investment before a single student can be enrolled. The investment in capital (buildings, equipment, etc.) can be enormous — particularly if studio-based technologies and satellite or terrestial broadcasting have to be put in specially. (If existing facilities are used, then the cost is a recurrent one.) Use of computer-based technologies for teaching and administration also adds significantly to capital cost — not just in equipment but also the investment in developing computer-based systems for student administration. Warehouses may have to be built and will certainly need to be equiped to meet the institution's needs. Further capital costs will be incurred if it is decided to set up an in-house print shop rather than use existing commercial printers. All this equipment will in due course wear out and need to be replaced. There are compensating savings for distance education — for example, one does not need to provide student residences or (generally speaking) permanent classrooms.

(4) All institutions have recurrent overhead costs (covering such management functions as personnel, finance, management services, administration, institutional planning and evaluation, etc.). The more sophisticated the management and control task, the greater these costs are likely to be, and this too is likely to load costs on to distance education. All these systems will need to be working before a single student can be enrolled.

(5) The extent to which fixed costs predominate in distance education was shown in comparative study of the costs of courses at conventional British unversities and at Britain's distance-teaching Open University: whereas the ratio of variable to fixed course costs at conventional British universities was about 1:8, at the Open University it was about 1:2000 (Laidlaw and Layard, 1974).

(6) Because the cost structure is so different, those setting up and operating distance systems experience considerable difficulty in describing the operation and economics of their institution to officials in government and funding agencies (Snowden and Daniel, 1980:76, Swinerton and Hogan, 1981:1). The shere investment in starting a project, and the fact that one has to wait for a return on the investment, may put governments or commercial backers off. In contrast, the early investment in a small traditional school or college may be much less.

(7) Because the variable cost per student can be low, distance education systems can be cheaper per student and/or graduate than conventional educational systems, but only if the high fixed costs can be spread across sufficient students to bring the average cost per student or graduate down below the level attained in traditional forms of education. (The average cost per student is equal to the fixed costs divided by the number of students, plus the variable cost for one student).

(8) If the variable cost per student in a distance system is higher than that in a conventional system, one will never have a cheaper system. In designing the system, one has to keep the variable cost per student (cost of materials given to the student, distribution costs of the materials sent to each student, and the cost of corre-

spondence and face-to-face tuition) below the direct cost per student in traditional systems (typically, the cost of staff and consumables). Obviously, the cost per distance-taught student goes up if one gives students (a) more rather than less material, (b) more expensive as opposed to cheaper materials, and (c) more tuition.

(9) Not all courses will attract sufficient numbers of students to bring the average cost per student down below that found in traditional systems. The same course can be both inefficient and efficient in comparison with the costs of traditional education, depending on the effect of its cost structure and the number of students it has on average student costs.

(10) The fact that some courses are not cost-efficient compared with similar courses offered in traditional institutions does not mean that the whole institution is inefficient, provided there are other courses which are cost-efficient in comparison with conventional courses. One can justify having such courses if they are an integral part of a system providing wider access to degrees, diplomas etc. (Laidlaw and Layard, 1974:458). However, the more courses one has, the greater the investment cost in those courses and the greater the overhead cost of supporting their presentation, so the greater the number of students needed to justify the programme as a whole. Wagner (1977:371) suggested that one of the reasons why most of the economies of scale of the UK Open University were reaped in its first years (ie. 1971–73) was that in the period 1974–76 the rate of increase in student numbers did not keep pace with the increasing number of courses presented.

(11) Each course involves an investment in development and production. The longer the course is used, the greater the number of years over which the capital cost of the investment in design is spread, and hence the more efficient the system. The corollary of extended course lives is that the course may become outdated. This will undermine the quality of the education seriously.

(12) The time it takes to develop different media varies enormously, as Sparkes (1984:219) indicated (e.g. one to ten hours of staff time to develop one hour of small group teaching, from two to ten hours to prepare a one hour lecture, 50 to 100 hours to prepare a teaching text which will occupy a student for one hour, 300 hours or more to prepare one hour's worth of material on interactive video disc — though these figures need to be treated with some care). Choice of media is crucial to costs.

(13) Each media has its own cost structure. Some medium which are cost-efficient for low student numbers (e.g. face-to-face tuition) are not cost-efficient for large numbers of students. The reverse will be true of a medium such as video in the form of transmitted television.

(14) One can affect the cost of a medium depending on how you use it. For example, the costs of giving students video cassettes, loaning video-cassettes to students on a returnable basis, selling video-cassettes to students, and transmitting video in the early morning for personal recording by students on their own video-cassette recorders, are different, both in absolute terms and in terms of who bears the cost (institution or student).

(15) The cost to students can affect access significantly.

(16) It is difficult to establish the relative pedagogic effectiveness of different media. It is therefore always a question of judgement as to whether or not a given institution could teach as effectively or even more effectively using cheaper media. This was the substance of one of Mace's criticism of the UK Open University — not that it was not on the face of it cost-effective in comparison with other traditional British universities (although he had some doubts here too), but that it might be even more cost-effective if it were only more efficient (1978:305). Mace particularly queried the value of broadcasting, which is expensive.

THE LIMITATIONS OF ECONOMIC MODELS OF DISTANCE EDUCATION

The early economic studies of distance education led to the development of simple cost functions for distance education (see, for example, Wagner, 1977; Snowden and Daniel, 1980; Rumble, 1981; 1982a; Guiton, 1982). In Wagner's cost function for the Open University, for example:

Total recurrent costs = (the number of students x the average cost per student) + (the number of courses presented x the average cost per course presented including an allowance for its eventual replacement at the end of an agreed life) + overheads.

Whatever the value of such simple cost functions in demonstrating in simple terms to politicians and others the fact that distance education could be more cost-effective than traditional forms of education, they are frankly inadequate as management tools for making choices about costs. As Rumble, Neil and Tout (1981:235) remarked, they "do not adequately specify the fundamental variables, which affect costs, in sufficient detail to be of practical value to people who are trying to prepare an operating budget for an institution".

To tackle this problem, Rumble, Neil and Tout identified a whole series of cost functions which would make explicit the fundamental variables affecting costs in a distance education system, and which would be of practical help to those trying to fix a budget for a distance teaching institution. Nevertheless, even detailed cost functions have limitations, since they too involve simplifications. In particular, they will not solve the management problems posed by the need to cut costs. This led Rumble to argue that, faced by the need to implement cuts, distance teaching institutions had to return to more basic principles of financial management, including the examination of baseline budgets, the need to cash limit budgets, the need to ensure that those responsible for the activity are responsible for the budget, the need to give budget holders only the minimum necessary to the job, and the need to deal with uncertainty (2982b:200–01). The approach taken to budget cuts is likely to be different, depending on whether one is facing a short term crisis or a long term run-down in financing such as may follow from the progressive cut of value of public funds given to the institution. The latter may well necessitate a fundamental rethinking of the basic strategies for developing, producing and distributing materials, teaching, and administration.

STRATEGIES AND THEIR COSTS

The basic strategic choices made by an institution do affect costs significantly. Planners who are setting up distance teaching institutions on a limited budget, and those managing such institutions in situations where resources are declining, can be much better informed about the nature of the strategic choices open to them, thanks to the growing literature on distance education.

To start with, the way in which distance learning materials are developed affect costs.

(1) One can use existing material as it stands or adapt it to meet the needs of distance taught students. This approach involves hardly any creative effort on the part of the teaching institution and vastly reduces the costs of development, but will usually involve the payment of copyright fees to the originating institution.

(2) One can "tack" a distance teaching system on to a conventional system by videoing lectures given to conventional students and preparing lecture notes to accompany the videos. Once lecture theatres have been equipped with video cameras and recording equipment, the additional per capita costs of preparing videos and lecture notes for use by off-campus students can be very little (Wagner, 1975; Leslie, 1979). A vast library of video material can be built up rapidly for relatively little total cost. While the quality of these videos may not be very high, they are adequate for their purpose. Broadcast by satellite, they can enable students spread over very wide geographical areas to "listen into" lectures providing up-to-date information on technological advances. Students may also be able to participate in the lectures through telephone links (tutored video instruction or TVI). Such approaches are now being used by a number of universities including the National Technological University in the United States.

(3) One can plan the curriculum and specify course content in broad outline, and then appoint academic consultants to develop the written materials and scripts for broadcasts and audio visual materials, as at the Universidad Estatal a Distancia in Costa Rica. This has the great advantage that payment is by results. The academics are not permanent members of full-time staff, so there is no long-term commitment to them. If they fail to deliver the goods, they do not get paid. Advance notification of a course may be given, but sometimes (as at the Open Learning Institute in British Columbia), a course is only announced once all the materials have been handed over for production. The process has more in common with a publishing house than an educational institution.

(4) Finally, one can employ a core of full-time academic staff to create the course materials. This is the most expensive way of staffing up to develop distance education materials.

Similarly, what one needs to produce (given one's choice of media), how one produces it, and where one is doing the production, can affect one's costs dramatically. To take the case of print, all material requires editing and design work. The cost of editing an author's manuscript into a form suitable for a self-instructional learning package is likely to be greater if contract authors are used. The cost of design can vary, depending on the extent to which illustrations and artwork is used. The way text is set affects costs. Offset lithography from typed originals is generally cheaper than letter press printing from hot metal typesetting. Use of word processors instead of typewriters makes the preparation of camera ready copy even easier, and can affect authoring costs. Timmers (1986) reckoned that at the Vancouver-based Open Learning Institute word processing cut the time taken to develop and prepare for production a page of text from 120 hours to 50. On the other hand, where texts have to be handwritten, costs can escalate. The Allama Iqbal Open University pays its calligraphers on the same scale as university lecturers. The Sri Lankan Open University prepares its texts in more than one language, thus incurring the costs of translation. The costs of printing can also vary. Paper costs differ from country to country; different grade papers may be used. The costs of the offset litho process are affected by whether paper or metal plates are used. The former are cheaper but are good for only about 500 copies.

The use of colour adds greatly to the costs of printing. The length of the print run makes a difference to the unit cost per title. On the other hand, where more than one year's stock is printed, the costs of storage need to be taken into account. Variations in distribution costs are also significant. It is difficult to make generalisations, but obviously it depends whether the materials are mailed direct to individual students' homes, as happens at the British Open University, or are trucked to local centres for collection by the students, as happens at the Universidad Estatal a Distancia in Costa Rica.

The production costs of video varies enormously too. The costs per hour of video-tape lectures is much less than "broadcast quality" television, and these will vary from country to country, depending on technical standards and staffing levels. What constitutes broadcast quality television is subject to different standards. In the United States the Public Broadcasting Service broadcasts 3/4 inch Lo-band Umatic tape generated material, which is cheaper to produce than the 3/4 inch High-band tape material used by the television companies in the United Kingdom. It is perfectly feasible to produce "broadcastable" educational material at low cost. The National Technological University, for example, broadcasts low cost video-tape lectures by satellite which is perfectly adequate for its purpose. The distribution costs of video can also vary significantly, depending on whether video-cassettes or terrestial or satellite-based systems are used (the latter encompassing both direct broadcasting by satellite (DBS) and satellite to cable head ends), and the extent to which the distance education institution is responsible for meeting the capital costs of the distribution system or has access to transmission time at economic or marginal costs. Those interested in the costs of broadcasting should consult Eicher et al (1982).

The costs of computer-based systems have been insufficiently studied to date, but the experience of the Open University, which has some 80,000 students taking degree level courses, has been that the cost of providing each student with a home-based personal computer is such that the institution itself cannot hope to fund the project, while provision of a study centre based service does not provide sufficient access to computers to meet the academic needs of computing and other courses. Even if the University restricted itself to providing computers to students taking courses where a significant level of computing is deemed to be academically essential, it would quickly have to provide for the needs of at least 13,000 students. A machine meeting the needs of the University's students costs in the region of £500–600 at 1987 prices, so the University cannot afford to equip students with personal computers. In view of this it has recently agreed a policy under which it hopes that students will either buy the machines outright at a negotiated rate of discount, with or without a bank loan, or hire them from the University at a rate which still makes student purchase an attractive option for those students who can foresee the need to have a machine for several years. Even so, the cost of providing software and of supporting the project is not inconsiderable.

A further factor affecting institutional costs is what one teaches. There is a world of difference between the costs of developing, say, basic language courses which can be used for many years with little change, and for which there is a ready and on-going market; and developing a suite of courses leading to a master's degree in some advanced scientific or technological subject, where one is teaching about advances at the leading edge of research which necessitate frequent changes to the material, and where the number of students is very small.

CONTROLLING COSTS IS A MANAGEMENT FUNCTION

It is a truism to say that the control of costs is a function of management, whether it is at the simple level of budgetary control, or at the more fundamental level of agreeing strategies which will deliver products at a price which the institution and its customers can afford. The examples given above show not only how difficult it is to cost distance education in abstract, but also how the costs of particular systems can be affected by management decisions. They also suggest that answers to general questions such as "How expensive is distance education?" or "What does it cost to teach at a distance at the Open University?" are only meaningful within a specific context.

Management can only cost strategic options and control costs if the specific costs of activities are clearly identified. To do this, managements must develop costing systems which will meet their needs.

During the late 1970s and early 1980s there was considerable discussion about the methodology of costing "new technology" projects in education — including, of course, distance education (c.f. UNESCO, 1977:11–35; Jamison, Klees and Wells, 1978:23–69; Eicher et al, 1982:41–64; and also Orivel, 1987). This led to the widespread acceptance of a general methodology for costing such projects which concentrates on the functional analysis of costs (general administration costs; production costs; transmission or distribution costs; and reception cost) (Eicher et al, 1982:51). In fact, relatively few projects have been costed in accordance with the recommended methodology. Indeed, there are considerable discrepancies between individual cost studies, including the use of projected (budget) versus actual (final accounts) costs and differences in the treatment of costs, particularly capital costs and the annualisation or otherwise of the costs of developing and producing courses.

A basic problem is that the various costing methodologies referred to above do not show how the functional approach to costing which they advocate can be reconciled with the needs of institutional and departmental management, nor do they show how these costs can be related to the activities or programmes carried out by an institution. After all, what is important is not necessarily how much is spent on developing and producing materials, but how much a particular course or programme of courses will cost.

The situation is made more difficult because typically institutions are required to analyse costs by nominal codes (salaries, consumables, travel, etc.) within department (reflecting management responsibilities). This approach also fails to identify the costs of activities, which is why there is such poor cost control in so many institutions.

How these problems can be solved has been the subject of a number of recent papers and articles all of which are, I suggest, predicated on the assumption that this kind of three-way complex analysis of costs (departmental/nominal costs; functional costs; and activity costs) will be done on computers using spreadsheets.

So pervasive have microcomputers become — at least in the richer countries — that we tend to forget that the microcomputing revolution is only 13 years old. Apple Computer Inc. was established in 1975, launching its Apple II microcomputer and VisiCalc spreadsheet in 1978 — thus introducing business to the potential of low-cost, high-powered desktop computers. Other companies had meanwhile entered or were about to enter the market. There was a sales' explosion of hardware and software, including further and more powerful spreadsheets such as Lotus 1-2-3 and Microsoft Excel. Business — and the administration of distance education — was and is being revolutionised (see Rumble, 1988).

In a series of papers, Rumble (1986a, 1986b, 1987) has outlined an approach to the costing of distance education based on: (1) identifying the basic functional structure of distance education (development, production, distribution, presentation or delivery, overhead management, etc.) by media; (2) the use of resources by different academic programmes (first degree level, higher degree level, research, sub-degree work) and individual courses; (3) the consumption of resources by departments (Faculty X, Personnel, Editing, etc.); and leading to the costing of activites. In approaching the problem of assigning costs to activities, Rumble looks at the problems of assigning staff costs to activities; annualising development and production costs over the life of a course; the treatment of capital costs; problems of joint supply, where a particular course or course component may serve the needs of more than one academic programme; and the apportioning of overheads, including the desirability or otherwise of full absorption costing.

Elsewhere Rumble (1985) has described in general terms how the Open University, forced to cut the costs of its courses in 1984–85, identified the cost components of developing, producing and presenting courses and developed spreadsheets to model these costs against changing assumptions about resource usage (numbers of hours of tuition per course, number of audio-cassettes per course) and changes in student numbers on the course. Initially, these spreadsheets were done manually, but the system was quickly computerised and is now quite sophisticated. Markowitz (1987) has described the use of spreadsheets to aid financial decision making at the University of Florida using Lotus 1-2-3.

CONCLUSION

If institutions are going to adequately control their costs in a world in which funding sources are diversifying and the value of public funds decline, then they will have to tackle the problem of developing budgetary structures which adequately reflect not just departmental but also functional and programme costs. This is perhaps the greatest challenge facing publicly-funded distance education institutions today. Ironically, of course, it is something which commercial correspondence and distance teaching institutions have known for a long time. After all, if their financial management is poor, they go out of business.

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Papers

Performance in relation to student and course variables in the Remedial Science Programme at Universiti Sains Malaysia, Penang, Malaysia

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PURPOSE OF THE STUDY

This paper is based on a research study that investigated the academic performance of the Remedial Science Students at Universiti Sains Malaysia (USM) in relation to personal student variables, learning and course materials. The research was conducted in December 1986, during the residential intensive period. The purposes of the study are to

(1) investigate sources of student problems that may affect or influence their academic performance.
(2) highlight factors related to students' learning and course materials that have a positive or negative influence on academic performance.
(3) break down learning into a continuum of five phases and investigate the relevant factors of each phase that affect academic performance. The five phases are (i) student readiness (ii) self-learning using self-instructional course modules (iii) learning during tutorials at the tutorial centres (iv) face-to-face learning at USM during the residential intensive period (v) self-learning after the residential intensive period prior to the examinations.
(4) evaluate course materials and investigate course-related factors that influence academic performance.

DEFINITION OF TERMS

Academic performance is college attainment or the "actions of a person when given a learning task" (Page & Thomas, 1977, p. 262). In this study academic performance is measured by marks and the equivalent grades received in the examinations for the courses.

BACKGROUND

The Remedial Science programme lasts two years and was started at the Centre for Off-Campus Studies at USM in the 1978/79 academic year. Its purpose is to increase the pool of indigenous students (Malay and tribal) proceeding to the degree programme. Every year about 120 students are interviewed and screened before being admitted to the Remedial Science I programme for a year, after which they are examined and if successful, proceed to Remedial Science II, for another year before being admitted to the degree programme.

The Remedial Science Programme consists of eight distance education courses offered by the Centre for Off-Campus Studies at USM. The centre was established in 1971 and is the only public-funded institution in Malaysia that offers distance education in Remedial Science and degree programmes leading to B.Sc (Hons.), B.A. (Hons.) and B.Soc.Sc. (Hons.). Distance education students graduate with the same degree as their full-time counterparts with no distinction between the two. The degree programme requires a minimum of six years to complete, five years by distance study and one year residential full-time study. Nevertheless, a three-week intensive residential course is mandatory for the initial five year period. All first year students are required to attend tutorials and labs at their nearest tutorial centre but all science students i.e. year one through five are required to attend tutorials and labs for the entire five year distance education period. To meet this requirement, we have ten tutorial centres in West Malaysia and two in East Malaysia. We now have 123 courses written in the self-instructional modular format, out of which eight are Remedial Science, 50 Sciences, 28 Social Sciences and 37 Humanities courses. In the 1987/88 academic year

Remedial Science programme was intended as a pilot for other courses and programmes and as an aid to improving the academic performance of students.

METHOD OF INVESTIGATION

SOURCES OF DATA

Two questionnaires were used in the study, a general questionnaire with 20 questions and a more specific questionnaire, one for each course, with 63 questions. The two questionnaires encompass the five phases of learning stated earlier.

DEVELOPMENT OF THE QUESTIONNAIRE

The questionnaire structure was initially planned and subsequently vetted by an Adhoc Committee for Course Evaluation at the Centre before pretesting and improvement.

RESULTS OF SURVEY

A total of 215 students registered for the Remedial Science courses, of which 158 completed the questionnaire. This is a response rate of 73.48%.

DATA ANALYSIS

The completed questionnaires were coded for the SPSS computer analysis. Marks and the equivalent grades in the course examinations were matched with the questionnaire data and entered into the computer programme. Appropriate variables in the questionnaire were analysed for significant differences related to academic performance by using the t-test or the analysis of variance (ONEWAY and ANOVA in SPSS) and correlations.

SUMMARY OF FINDINGS

The findings are presented in answer to questions related to the purposes of the study. They are given in the order of the phases of learning that our distance education students undergo.

Phase I: Study Readiness

Question 1: How ready are the students for their learning tasks?

Most students (88.6%) organise and plan their studies. 67.7% make daily plans while 30.4% make weekly plans. The average daily study time is 2.65 hours, averaging 16.5 hours per week. Average time required for the study of all courses during the academic session from July to April is 412.78 hours. The majority of students (63.6%) study continously for 1–2 hours each time. Most students (84.2%) do not study with their friends and those who do study together do so for about 1–2 hours at a time. 62.7% of the students have a regular study place, usually their home (79.1%) and work place (36.7%). Many students (42.4%) live within 1–20 km of their tutorial centre.

Question 2: What are the factors of study readiness that influence academic performance?

Students who registered a year earlier, most of whom were doing the Remedial Science II courses or repeating Remedial Science I courses did significantly better (0.05 prob.) than the Remedial Science I students. There is a significant positive correlation ($r=0.1220$, 0.01 prob.) between study time in groups and academic performance. Students who spent more time discussing course materials together did significantly better (0.01 prob.) than those who spent less time doing so. However there are no significant differences in performance between students who study alone or in groups.

Phase II: Self-Learning Using The Self-Instructional Modules

For this phase, only academic performance as it relates to learning in the various aspects of the course modules is reported.

Question 3: What are the factors pertaining to the self-instructional modules that influence academic performance?

Students' performance is positively correlated with academic performance (Table I) and no significant differences or correlations are observed (Table II) for the following areas of the self-instructional modules as perceived by students.

Phase III: Tutorial Learning And Services At The Tutorial Centres

Question 4: What are the perceptions of students of the tutorial services offered at the tutorial centres?

Tutorial materials are not easily available at the tutorial centres (54.5%) and references are not readily available at public libraries (67.5%). The students' perception of their tutors is punctual (87.0%), creditable (73.4%), and these perceptions are not affected by the tutors' qualifications (56.5%), but

TABLE I

Course variables with significant positive correlations in relation to academic performance

0.01 level

- Appropriate print layout
- Clear course objectives
- Interesting course content
- Simple course content
- Clear course content
- Accurate course content
- Current course content
- Easy to understand illustrations
- Clear exercises
- Sufficient guide to exercises
- Meaningful additional materials
- Easy additional materials
- Language, easy to follow
- Cooordinated language use
- Students complete all exercises as they appear

0.05 level

- Clear printing quality
- Attractive printing product
- Pact course content
- Wide scope course content
- Related course content
- Clear illustrations
- Sufficient exercises
- Simple exercises
- Accurate guide to exercises
- Meaningful answers
- Clear answers
- Related additional materials
- Language easy to understand
- Interesting additional materials
- Current language used
- Simple language use

rather by the tutors' experience (59.6%). The students concur that they gave complete attention during their tutorials (84.6%), and perceived the tutor as hardworking (57.8%) or just doing a job (34.7%). However 75.8% of the students were given special attention by their tutors if they faced problems, tutorials are well scheduled (78.7%), the teaching methods used were appropriate (73.9%), the tutors repeat important facts (42.2%), or review part of their modules (43.1%), felt that the tutorial teaching is effective (33.6%), but 56.7% felt that it is effective with some methodology improvement. The most effective component of the course was the tutorial (76.5%) while the laboratories were rated only 25.3% and personal discussions with the tutor only 32.1%.

TABLE II:

Course variables with no significant differences or correlations with academic performance

- Paper quality
- Clear/unclear illustration
- Ignore, skim or study objectives
- Organized/disorganized course content
- Always/often/sometimes/seldom clear concepts
- Sufficient/insufficient illustrations
- Useful/useless illustrations
- Complete/incomplete illustrations
- Relevant/irrelevant illustrations
- Sequential/unsequential exercises
- Varied/unvaried exercises
- Sufficient/insufficient answers to exercises
- Easily/uneasily available additional materials
- Current/outmoded additional materials
- Complete/incomplete additional materials
- Clear/unclear lab directions
- Sufficient/insufficient lab directions
- Accurate/inaccurate lab directions
- Sequential/unsequential lab directions
- Succint/longwinded language
- Formal/informal language
- Interesting/boring language
- Each study sitting (time)
- Pages covered each time
- Weeks to finish per module
- Completion/incompletion of exercises as they appear
- Completion/incompletion/part completion of exercises after completing module
- Reference to answers before answering exercises
- Reading of reference materials provided
- Use of supplementary materials

Question 5: What are the factors pertaining to tutorial services at the tutorial centres that influence academic performance?

Students' performance is significantly affected (0.05 prob.) by the availability of references at public libraries, adherence to tutorial schedules, the tutor reviewing parts of the module, and positively correlated at the 0.01 level with the students giving undivided attention during tutorials.

Phase IV: Organization And Actual Face-To-Face Learning During The Residential Intensive Period

Question 6: Is the present organization of the residential intensive course satisfactory?

An overwhelming majority of students (96.2%) felt that the residential intensive course is very useful in terms of lab use (62.7%), lectures (84.2%), consultation with lecturers (76.6%), meeting of friends taking the same course (74.7%), use of the university library (72.2%), preparation of coursework assignments (43.0%). However 36.7% of the students had problems during this time, of which 27.2% were financial. The other problems do not seem to loom large except food (24.7%), possibly because many cafeterias are closed during this time as the full-time students are on vacation. The majority of students (77.2%) felt that the residential intensive course would be unsuitable if altered a level or a year of study at a time.

Question 7: What are the factors in the intensive course organization that may influence academic performance?

The academic performance of students is significantly affected if they have problems at the intensive course (0.05 prob.), and if their problem is separation from the family (0.05 prob.).

Question 8: What are the students' perceptions of advantages of their face-to-face learning experiences?

The majority of the students perceive the residential intensive course as very beneficial (55.2%) and somewhat beneficial (37.8%). Sufficient attention was given by lecturers (81.8%), their methods of teaching were very effective (35.4%), and somewhat effective (50.8%). Lecturers were very encouraging (31.2%) and somewhat encouraging (43.7%), tutorials and lecture schedules were adhered (97.4%) but more than half of the students (52.7%) felt that the time given by lecturers to solve problems was insufficient. 53.0% of the students took the opportunity to hold dicussions with friends, only 33.8% made a lot of library references, 27.7% felt a belonging to the university, 28.1% made new friends and 47.5% acquired new learning techniques.

Question 9: What are the students' perceptions of advantages of their face-to-face learning experiences that may influence academic performance?

Of ten variables examined in Question 8, there were significant differences in academic performance for those who felt a sense of belonging to the university and those who do not (0.05 prob.).

Phase V: Self-Learning After The Residential Intensive Period

Question 10: What are the students' perceptions of their own learning after the residential intensive period?

After the residential intensive period 84.2% of the students felt more confident in their coursework preparation. 79.8% felt more confident on their continous evaluation tests carried out at the tutorial centres and 78.0% felt confident about their final examinations. The learning process during the intensive course period has helped 85.1% of the students update their learning skills, improve their ability to supplement course materials (80%) and learn techniques to answer examination questions (77.1%).

Question 11: What are the factors in self-learning after the intensive residential period that affect academic performance?

There were significant differences at the 0.01 level in the academic performance of students who felt they were more confident in their coursework preparation, continous evaluation tests and final examinations compared with those who did not feel confident in these areas.

CONCLUSION

This study has revealed the significant factors that affect student academic performance. Efforts to improve courses and services should concentrate on these factors.

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Talking to New England: Interactive radio broadcasting in Australian distance education

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PREAMBLE

The University of New England is the major provider of distance education in Australia with over 6,000 external students. The Talking to New England interactive radio project is one of the programs being developed by the University of New England to facilitate interaction between academics and students. The project allows academics on campus in Armidale in Northern New South Wales (see diagram) to present material through local FM radio stations and then respond to questions from external students in Sydney (550 kms to the south), Newcastle (400 kms to the south) and Armidale itself live-to-air.

Cassette tapes of the total program are despatched by mail to students outside the broadcasting area. An interesting spin-off occurs in Coffs Harbour 110 km to the east of Armidale. A local FM radio station rebroadcasts one of our programs each week as a community education project. The result is a unique use of interactive radio in distance education, or as one newspaper called it "educational talkback".

The project builds on Australia's long tradition of radio in distance education with institutions like School of the Air. It brings together the leading role in distance education enjoyed by the University of New England for 35 years; the popularity of talkback radio in Australian society; the proliferation of community radio using FM channels in Australia; and the fact that 45% of UNE external undergraduate students are in the Sydney area and 6% in the Hunter Valley area centred around the city of Newcastle.

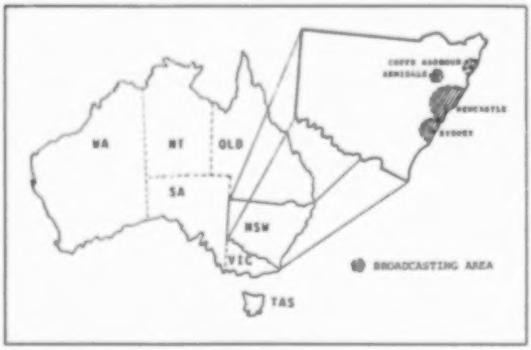

Figure 1 — Map showing the broadcast areas.

PROJECT DESCRIPTION

The lecturer records a program on some aspect of the subject in the Audio Visual studio at UNE, Armidale. This segment of the program has varied from eighteen to forty minutes, but an average is thirty minutes duration. The style of presentation shows considerable variety between subject areas and individual academics. Production techniques such as musical breaks and fade-outs are added at the time of recording. The tape is then sent to the radio station in Sydney at least a week before the broadcast is scheduled. On the night of the broadcast this is played in the Sydney studio with live voice superimposed on the music breaks to introduce the program and give reminders of the talk-back telephone number. After this prepared session, the air-ways are open to students, and to the public (up to 20% of the calls to date) to phone the Sydney studio which is linked by telephone land-line to Armidale, and discuss matters over the air with the academic in Armidale. During this time the announcer joins the academic in a discussion on the subject. This discussion will be partly based on a list of questions provided, but also partly from the announcer's own understanding of the subject. Where there is a lull in calls, project staff from the Department of External Studies (secretary, clerk, office administrator and course development assistant) call in with questions which have previously been solicited from students outside the broadcast area.

TECHNICAL PRODUCTION

The broadcast program originates from the New South Wales Institute of Technology studios of Sydney Educational Radio, 2SER-FM, owned by NSWIT and Macquarie University. The station's transmitter is located on the roof of the NSWIT, 26th floor, Tower Building, from which the station's signal provides good coverage for the wider Sydney metropolitan area.

The station's talkback facilities are used, with a separate three line switchboard to receive listeners' calls. The program is broadcast with a seven second delay.

To enable the "live" link with Armidale, a 10khz line is used from UNE to the 2SER-FM studio. A second 3khz line is used to send the "pre-delay" studio output signal back from 2SER to the UNE studio. This line is also used for communication between 2SER-FM and UNE's technical producers.

A further 10khz line is used from 2SER-FM control room to Newcastle University Radio, called 2NUR-FM, in Newcastle. The Armidale relay is provided by a split from the return line to radio station 2ARM-FM's studio in Armidale. A tape of the total broadcast is despatched to Coffs Harbour Youth Radio station, called 2CHY-FM, for rebroadcast.

As virtually all the program content is spoken word, the broadcasts are in mono.

Listeners to 2NUR-FM and 2ARM-FM who wish to participate in the talk-back are required to call 2SER-FM, where they are given priority "to air" wherever practicable. This does not appear to discourage participation from such listeners to any noticable extent.

THE SELECTION OF APPROPRIATE COURSE MATERIAL

Initially the choice of programs has been based on self-selection. A general memo is circulated within the University. So far, all academics who responded, have subsequently offered a program. This has called for flexible budgeting but the response has to date not been unmanageable.

Brief general advice is given to the academic about matters such as: the types of presentations that can be used; how to encourage student participation in talkback; use of anecdotes and references; and advising the academic to relax because this relates to the quality of the presentation; but much is left to the academic's ingenuity. As a result, the format ranges from straight lectures to docu-dramas, from panel discussions to guidance on practical work, from musical examples to prominent people interviews, and others. The range of subjects offered include history, music, english, psychology, financial management, biology, and education amongst others. In 1986, twenty-seven programs were broadcast. In 1987, this was increased to forty-six.

PLUGGING THE AUDIENCE IN

The success of the series is dependent upon the external students listening and participating. Incorporating the broadcasts as part of course work is an important objective.

All external students are given a broadcast schedule at the beginning of the semester. Students for each subject are reminded of the broadcast in their teaching material and by mail two weeks prior to the broadcast. If they are in the broadcast area they are asked to listen and then to phone in on the night, and if they are outside the area they are asked to send in questions before the broadcast. Students

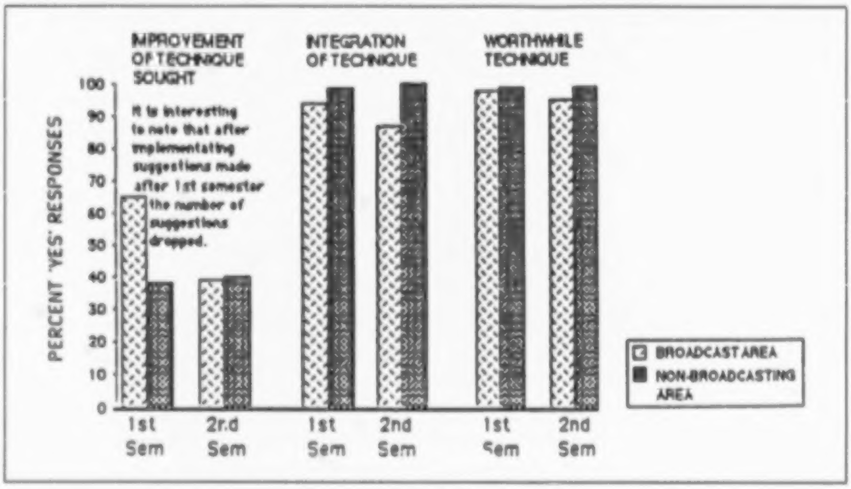

Figure 2 — A comparison of responses from the broadcasting and non-broadcasting area.

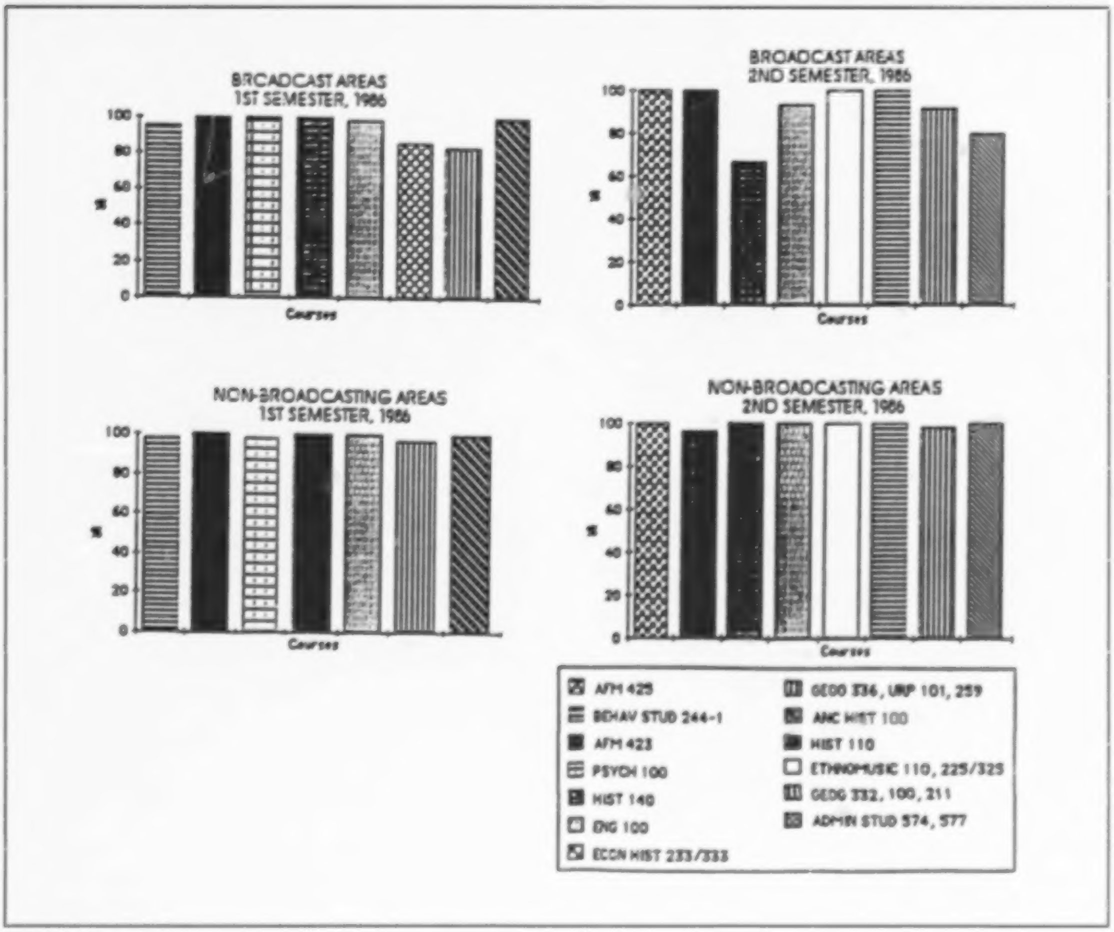

Figure 3 — A comparision of the responses by subject area, semesters and broadcast area.

enrolled in the subject are telephoned on the day of the broadcast and reminded to participate. Three or four assistants in Armidale monitor the program and phone in when necessary with questions from students from outside the broadcast area to keep the talkback session moving.

Planning for this audience includes a script that accommodates the general listener. A typical script would read, "... a warm welcome to you all, particularly students of... but also others interested in this subject, and we hope you will make the Armidale connection tonight... you are most welcome to take part in some intelligent and stimulating talkback, even if you are not a student."

BUDGET & RESOURCES

Talking To New England is an important priority for Sydney Educational Radio and two 2SER-FM producers have been given the brief as a major part of their production duties. Both producers have been heavily involved in prior educational talkback projects on the station.

The number of staff working on the series as a major part of their work brief is seven in addition to general assistance from the Department of External Studies in terms of dispatch, clerical assistance, word processing etc. These human resources plus a number of other hardware resources, have been absorbed by the radio station and the University.

The direct financial cost is approximately $500 per hour made up by $250 on production and airtime for 2SER; $110 airtime for 2NUR, as well as $25 airtime for 2ARM; $100 for telephone lines; and $20 for technician overtime.

EVALUATION

Evaluation of the series can be approached by examining the number of calls received, and the responses from academics, the broadcasting industry, the students and the newspapers.

NUMBER OF CALLS RECEIVED

The numer of calls per program has varied from three to thirteen. The thirteen was for an Ancient History program on Sulla where the question and answer session was very factual. Twelve calls were received for a program on cancer cells which seemed to generate calls associated with emotions restricting discussion. Five to six seems to allow optimum discussion between student and academic. In 1987, to date of writing, the average has been five point five. The number of questions received from outside the broadcast area has varied from nil to eight with the average being three point five.

ACADEMIC EVALUATION

All academics involved in the broadcasts are surveyed at the end of the year. The responses have been extremely encouraging. Although they stated their preparation time as varying from one to thirty hours, all want to repeat the experience. It should be remembered, however, that these were academics who had volunteered their service initially.

STUDENT EVALUATION

All students in the broadcast area are sent an evaluation form. They are asked to fill it in immediately after the program. Students in the non-broadcasting area are sent a different evaluation form with the cassette of the program and are asked to return it with the cassette. Typical comments were:

- *The talkback section gave a broader view of how the lecturer feels about his subject matter.*
- *I feel this method of communicating greatly enhances the course for external students and gives them a better feeling of participation.*
- *Terribly unnerving talking on radio (but practice makes perfect so more talkback radio please).*

The following statistics were obtained from 1986 evaluation sheets. Note the positive response from students in the non-broadcasting area.

There was no significant difference in responses between subject areas, between semesters, nor between broadcast/non-broadcast areas as the graphs below show.

RECOGNITION BY THE BROADCASTING INDUSTRY

Talking to New England was judged by the 1987 Pater panel as being the "best program on Australian public/community radio".

The Paters are awarded annually by the Australian Academy of Broadcast Arts and Sciences, spanning categories which cover commercial radio, the ABC, public/community radio, and international broadcasters, including stations in New Zealand, the USA, and Britain. In 1987 there were 862 entries in nine languages received from 270 stations in eighteen countries. It is a prestigious award and duly recognises the University of New England's innovative approach to educational broadcasting and its work in increasing access to educational opportunities for all Australians.

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University education at a distance seen as an innovative educational technology for underdeveloped countries

A Latin American view

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JUSTIFICATION FOR NEW TYPES OF EDUCATION

The phenomenon of *accelerated massification* in higher education has been present in the majority of underdeveloped countries, especially during the last 30 years. Although this phenomenon has also had repercussions in other, highly developed countries, its origins and shape were different, so the solution for it also turned out to be different.

Some of the main factors which have contributed to the massification of education are:

(1) important changes in social values; particularly in ideas about the equality of citizens;
(2) new political ideologies;
(3) rapid and large scientific and technological progress;
(4) accelerated processes of urbanisation;
(5) industrial expansion.

Traditionally, higher education has been seen as something used only in the first part of a person's life; as a privilege, accessible purely to certain social groups with a high status. The five factors stated above, threatened the continuity of these two suppositions for all contemporary societies. In present-day third world societies, however, these factors and suppositions turned out to be more complicated and more encompassing under the influence of other, additional factors characteristic of underdevelopment. In these societies, the existing university infrastructure was very limited. The institutes of higher education were not prepared for the enormous and inopportune student massification. Therefore the expansion of the existing university systems met with serious financial problems and little time to set up new programmes and institutes. The availability of intellectual resources at a high level, needed to fulfil the demands of researchers and trainers for the system, also resulted in a serious bottleneck. Attempts were made to resolve this in a rather improvised way, by recruiting very young university graduates, without actual professional or pedagogical experience, and often without the vocation necessary to fulfil academic tasks. Moreover, new social, scientific and professional demands required a considerable transformation of the archaic structures found in the majority of traditional universities, and a better adjustment to the demands of national development.

The conventional universities found it hard to face up to the enormous challenge represented by the demands mentioned above. In practice it turned out that most of them were content with a disproportionate expansion of size, without modifying their old organisational structure or their ancient methods. This usually implied a serious and growing deterioration of their academic qualities; restrictions were put on research, post-graduate studies, the rigorous selection and updating of teaching staff, the selection of students and the offering of services for several programmes in a social context. And the only objective of all these restrictions was to be able to grant a generally mediocre, teaching staff to large groups of students. For many developing countries, the insistence on rigidly maintaining a certain concept, nowadays obsolete in university studies, caused a serious *devaluation of knowledge,* and favoured an *unlimited and irrelevant "crave" for titles.* The inorganic extension of quota for university students, supposedly justified by the wish to create more study opportunities for all social classes, did not contribute to an effective process of democratisation. Various studies have demonstrated the existence of this paradoxical situation (Casas, 1981; Cresalc, 1984–7; Tedesco, 1985).

At the heart of this process lies a grave historical error concerning the *real function of education in the development of backward countries.* Education should have formed the starting point for the modernisation of traditional societies, but in reality it was used primarily to reproduce and continue the inequalities of existing social structures. The materialisation of the idea of development is relatively recent and typical of this century, especially of the period after the second World War. Spectacular efforts have been made to carry out social and economic reforms; programmes for the use of modern technologies have been tried out and it was thought that the success of an increase in the rates of schooling or of the stock of human resources in professional careers, would almost automatically bring about a change for the better in the living conditions in developing countries — towards the standard reached in highly developed countries.

Uslar Pietri (1987) points out in this respect:

"Some years ago the well known Swedish economist Gunnar Myrdal, proclaimed the failure of the development plans and their impotence and inadequacy in finding a reasonable solution for the frightful problem of world poverty. It can be said that the final balance, in extremely plain terms, has not been the development of the poor countries but the creation of the immense, crushing debt weighing them down at the moment.

Myrdal pointed out that one of the reasons for this failure was that cultural factors had not been taken into account sufficiently. Development in the European or North-American way is, in many respects, the fruit of a cultural peculiarity, which cannot be transplanted to other societies that have been formed under a different set of values (p. 4)."

If education does fulfil the important *function of safeguarding the continuity of culture,* today more than ever it can and should also *fulfil another transcendental function,* which permits the *transformation of said culture and its adjustment to new conditions faced by every society.* But in many underdeveloped countries, higher education is seen as a superficial ornament; as a "passport" to imparting privileges to limited groups of citizens. With this restricted conception, knowledge in general and research in particular become superfluous. Without the knowledge appropriate for every society, however, progress and development are impossible. Even if the fact and the necessity of worldwide interdependence are accepted, the exaggerated scientific, technological and economic dependence seriously block attempts to take a step forward and rise towards an effective, national development.

From the framework described earlier on it must be clear that the educational system needs to retrieve its significance and contribution with the help of programmes and citizens which permit a substantial modification of current cultural limits in order to develop social, scientific and technological values. The possibilities of transformation and modernisation in many conventional universities in these countries will depend on whether or not they can diminish the current exaggerated attention towards enormous numbers of students in the first few years and reorientate themselves towards the consolidation of post-graduate studies, research, the extension of the university and the careful selection and training of teachers and students; in other words, the *search for and obtaining of excellence,* a necessarily relative value for every society. To this effect, any strategy should contemplate the use of new technologies, appropriate for conventional universities, but it should also plan the emergence of new educational options capable of handling large groups of students with efficiency. This is where in the past few decades a new type of education has appeared, called *university education at a distance.* Its rapid propagation in various developed countries, but especially in many underdeveloped ones, can be explained by its possibilities to solve some of the most pressing problems already described (Rumble and Harry, 1982; Young et al., 1980).

POSSIBILITIES FOR "UNIVERSITY EDUCATION AT A DISTANCE" IN DEVELOPING COUNTRIES

On a worldwide level it is clear that in the 1980s, the allocations of finances to the university sectors are becoming smaller, and everything seems to indicate that this tendency will continue for a long time. This is affecting many developing countries much more seriously, because it comes at an awkward moment, when on the one hand the demand for higher education is growing rapidly, while on the other hand the need to transform and modernise the university system is becoming more pressing every day. These two requirements (one quantitative, the other mainly qualitative) imply the need for abundant additional financial resources. To try to stop the growth of the number of students for any type of higher education by means of absolute restrictions does not appear politically feasible nowadays, especially not in democratic societies. On the other hand, favouring and infinite growth of some of the conventional university institutes would mean denying them every possibility for restructuring, with serious social and scientific costs as a consequence.

In short, and seen from the point of view of a "planning strategy" developing societies should try to find solutions that represent the reality and the necessity of satisfying the three conditions indicated before, namely:

(1) limited financial means with little flexibility
(2) increase in the social demand for higher education, especially by groups previously belonging to the margins of society and
(3) the imperative need for a complete transformation of the existing system of higher education in order to modify its obsolete qualities and put it

into tune with the new and incessant social and scientific demands.

The solution to the problems mentioned above requires great creativity on the part of politicians and planners from underdeveloped countries — we have already seen that attempts to solve these problems with conventional and unimaginative solutions would lead the university system into a "blind alley" and cause even more deterioration than is the case at present. It is essential that more attention be paid to the possibilities of new options and educational forms whose characteristics can help resolve the problem, parting from actual conditions and taking into consideration the objectives that are wanted. To this effect there have been numerous experiences in the world with innovative forms of education, whose possibilities need to be considered carefully in every case.

Without entering into a comparative and exhaustive analysis of the various new educational models (Botkin, 1979; Hummel, 1877; Mood, 1973; Rich, 1981; Toffler, 1974), it can be argued that the so-called university education at a distance in principle offers a rich variety of possibilities, which, if applied carefully to the peculiarities of every country, could offer an important contribution to the transformation of university systems. Let us examine some of the possible contributions to the three critical conditions pointed out earlier.

In the first place, with regard to the growing demand for higher education, a system of education at a distance, an "industrialised" form, could attend efficiently to large masses of students, placed at very diverse and distant points on national or even international territory. This population should be made up mainly of adults, who nowadays form one of the new and important social groups that demand their right to receive higher education.

In the second place, institutions of higher education at a distance in the industrial scale, can operate with costs that are comparatively much lower than those of a good, conventional university (Rumble, 1982; Casas, 1987). Of course, as also happens in large industries, the initial costs of establishing a university of this kind are fairly high, but once certain requirements have been fulfilled these then tend to be paid off soon.

Finally in the third place, in order not to be tied to prejudices of rigid traditions, universities at a distance could experiment freely with new technologies and procedures that are particularly suitable for developing societies. Furthermore, the diversion of large numbers of students towards universities at a distance, would significantly alleviate the existing pressure on the conventional universities, thus making it easier for them to revaluate their original function of research, post-graduate studies etc. In this way, the feasibility of modernising not only conventional universities but also the whole national system of education would be facilitated considerably.

These possibilities are based on the experiences of numerous universities in Latin-America, Europe and Asia as well as various socialist countries, where this new type of education is already having considerable success (Rumble and Harry, 1982; Casas, 1987).

UNIVERSITY EDUCATION AT A DISTANCE, SEEN AS AN INNOVATIVE EDUCATIONAL TECHNOLOGY

University education at a distance is considered to be a new educational technology and not just a simple modification of the present or conventional university education. As a matter of fact even though this form of non-traditional or non-scholarised learning has had illustrious predecessors (courses of correspondence, adult education, recurrent education, radiophonic education, study circles, etc.), it represents a serious attempt to innovate education in terms of: philosophy, theories, organisational structures, methodology of production and teaching, means of information and communication, individual autonomy, finance, cost tendencies and social repercussions. Holmberg (1981) adds in this respect:

"The innovative character of education at a distance consists of:

The basic ideas that a learning process can take place without the presence of a teacher and that the support given to the students can be adapted to their standards of knowledge (instead of insisting on their formal entry qualifications).

Its consistent use of non-contiguous means, for the presentation of learning material as well as for the resulting communication.

The methods used to exploit the situation of non-contiguous teaching/learning, in order to obtain the highest possible effect for the learning individual: structure and style of the presentation and communication (didactical conversation), adequate use of the means available adaption to the living conditions of the students, etc.

The special organisation which makes it possible to provide for independent, individual studying as well as for mass education, by means of personal tutorials or industrialised methods of working.

The influence exercised by education at a distance and adult education, the additional training and special conditions of the labour market, by means of opening up new opportunities to study as well as through its organisation and methods (translation from Spanish) (pp. 125–6)."

Others authors (Rumble and Harry, 1982) also argue about the *suigeneris* character of this type of education, with its strong emphasis on learning; however, maybe because it has only very recently completed its development, the definite structuralisation of a general theory to support it has not been reached. This does not prevent the use of partial theories about certain determining principles: adults, distance, individualisation of instruction, independent studying, theories and models of teaching and learning etc. On the other hand, and similar to other forms of "non-traditional" education, Wedemeyer (1981) points out a constant and accelerated process:

"During these years (from 1975 onwards), great progress has been achieved in various aspects related to non-traditional learning: aspects of how to construct and evaluate non-traditional programmes; the design and development of teaching material; the development of co-operative programmes for training and work, combined with studying; the linking of the learning process to the resources of the community, which are different to those of the schools; the different ways of organising knowledge and the disciplines that represent it, through the construction of the curriculum, the development of materials and instruction, studies about plans for adult education which have brought forth new information about the learning of said adults; the place of technology to provide opportunities of access to those who wish to learn; the trying out and use of new technologies and means for teaching and learning (television, telephone, satellite, cable, newspapers, cassettes, etc.); studies of demography and of the market in order to determine the needs of those who wish to learn; the coalescence and consortiums of institutions combining their resources to create non-traditional educational programmes on national and regional bases (translation from Spanish) (p. 134)."

The considerable growth of this new form of education by no means implies that it could substitute or eliminate the present or conventional university education that we all know. Both types of education have different and characteristic structures, functions, objectives and public, even if their final propositions of educating students coincide. Our central thesis is that underdeveloped countries would benefit widely from a convergence of the two types of education, forming a national system of education in which the institutes support each other. Taking into account the arguments from the first section of this paper, we can deduce that, given the present limitations, this convergence would be very useful in society.

It is advisable to consider the fact that the rapid extension of ideas and models of university education at a distance from developed countries towards other, less developed, countries is an encouraging sign, but also raises important questions. The danger exists that advanced models, such as the British Open University, the University at a Distance in Hagen, West Germany, etc. will be "transplanted" instead of "transferred", thus continuing a great but laborious historic tradition of universities that are important in their country of origin, but which become exotic and unfunctional when duplicated in underdeveloped societies in Africa, Asia or Latin-America. The most recent history of universities at a distance has shown, for instance in the case of the British Open University, that its methods and instructional materials encountered various difficulties in being incorporated in universities at a distance in Spain, Costa Rica and Venezuela. Even when they were used in the United States it seems that although the materials were highly appreciated, they were not used as much as expected. These examples, of which there are many more, emphasise a fundamental truth, which also goes for other kinds of technology, which is that *science and its principles are universal* (although not immutable) *but technology depends for a large part on the culture in which it is to be implanted.* As we have seen in other parts of this paper, there is an unavoidable interrelation between education and culture. That is why it is risky to make simple replicas of educational technologies that function successfully in other countries, especially if these are highly developed countries. This point was presented by Casas (1987) when he examined the "Illusion and reality of programmes for higher education at a distance in Latin-America" especially in relation to cultural, socio-economic, political, psychological and educational truths of worldwide appearance and the communicational, organisational and administrative infrastructure. All these facts, which explains many of the present national circumstances, must be complemented by way of a clear insight into international relations and forces, which include various concepts like centre-periphery, cultural alienation, multinational firms and theories about dependence. Only by understanding and taking into account all these institutional, national and international conditions, will it be possible to conceive a functional, educational technology, represented by a programme or institution of higher education at a distance.

Finally, supposing one is thinking about creating and experimenting with a university system at a distance, one must examine systematically all eventualities that innovations and their subsequent diffusion will be confronted with in any particular culture.

To launch an educational innovation, such as the one we have analyzed, in an underdeveloped country, but without the appropriate precautions would be an open invitation to failure. Even those people who accept innovations such as extremely advanced equipment and technologies (radio, television, telecommunications, computers, etc.) are not usually that receptive towards these new forms of education, because of deeply rooted beliefs in conservative educational formulas, which are though to be immutable. That is why, as was put forward by Rogers (1983) the institution and its programmes, as well as a permanent programme for "the diffusion of innovation" need to be planned carefully.

CONCLUSION

This paper puts forward arguments for the justification of making creative use of new educational technologies in developing societies, and especially for the so-called higher education at a distance, provided that its adoption is preceded by a careful study of the cultural characteristics of the society in question. The convenience of transplanting and copying outstanding models of universities in the world, as was done in the past, is rejected and it is recommended that a programme especially adequate for the diffusion of this innovative educational technology be conceived and developed.

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Motives and values in distance education – a differential student perspective

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INTRODUCTION

There are a number of studies presenting characteristics of distance students today. Extensive studies have tried to map out the student with regard to different kinds of background variables, often of a socio-demographic nature. These studies have for example shown that distance students are a great deal older than traditional students, that they often combine gainful employment with their studies and that they have families. However, few studies have analysed the motives of these students for their studies, an accusation which applies to some extent to traditional students also. The motives have perhaps been taken for granted and it has perhaps been assumed that they reflect or coincide with the political arguments underlying the introduction and establishment of distance education, e.g. social and economic factors. This paper presents motives for distance studies from the students' point of view and the students' value judgements of their studies. Distance students probably pay a certain (high?) price for their studies, their families and work suffering as a result. It may also be that their age leads to certain study difficulties.

Studies of various characteristics of distance students have quite naturally used the traditional student as comparison. The traditional student has formed a kind of control group. The legitimacy of such a procedure can sometimes be questioned, since the conditions and target groups *a priori* are so different. In the study presented here the comparison group consists of drop-outs. The choice of such a group enables us to work diagnostically and to study possible differences in motives and values between persons who complete their studies and drop-outs.

Earlier research has shown that there are differences between subject areas regarding studies and learning in traditional university education. Ramsden (1984) has for example demonstrated differences in approaches to learning and learning contexts in science and art disciplines. There are reasons to assume that such differences also manifest themselves in distance education, and a grouping of different subjects to areas will therefore be made. Motives and values will thus be examined in different subject areas.

Earlier research has also shown that distance students form a very heterogeneous group. Age is one of the variables with a very wide range. It has also influenced their performance. Studies show that age is also a factor. Another heterogeneity is to be found in the students' earlier education, especially in Sweden where there is an internationally unique admission rule (the 25:4 rule). According to this rule persons who are 25 years of age and can document at least four years of work experience are given admission to distance studies. The Swedish admission rules are thus very liberal and this makes distance students an even more heterogeneous group. In this study the students will therefore be differentiated according to both age and earlier education.

We can now formulate our problems as follows: what are the motives and values of a group of distance students who complete their studies and a group of drop-outs, and are the groups differentiated according to age and to earlier education? What are the motives and values in different subject areas?

DEFINITION AND SPECIFICATION OF VARIABLES

Motives

Motives were grouped into three categories. One category concerned general education including motives like working for an examination, supplementary studies and general knowledge. Another category was made up of motives connected with working life: to get more qualified work, higher wages, promotion within the work sector, a new occupation, in-service training and employment security. The third category was of a social nature, for example to meet other people, to study for enjoyment, to make social contacts and to gain greater self-confidence.

Values

Course satisfaction, investments and costs were the main categories for values. The first category includes variables connected with the course being studied and concerns values of course content, teachers and persons on the same course. The two latter categories are inspired by modern organization theory where it has often been empirically demonstrated that, for example, work satisfaction and labour turnover are related to variables like investments and costs (see e.g. Rusbult and Farrell, 1983 and Schell and Thornton, 1985). Investments here refer to the stakes that the distance student has to make with regard to time and economy; time to complete the studies, the convenience of the meetings from the point of view of time, the strain of travelling and the economic situation during the study time. Costs refer to the sacrifices that have to be made with regard to family and work: family problems during the study time, changes at work, stress, etc.

Drop-out

This study used the somewhat unusual method of letting the students themselves define whether they have dropped out or not. The definition is therefore not dependent on any public register.

Subject area

As regards subject grouping higher education in Sweden is organised in five different sectors roughly corresponding to a traditional division into faculties and departments. Three of the five sectors were chosen for this study: the administrative, economic and social sector, the cultural and communicative sector and the technical sector.

Age and educational background

As regards the variables age and educational background the group was differentiated into three levels. Age consisted of: under 30, 30–40 and over 40 years. Educational background consisted of: without upper secondary school (low), at least two years upper secondary school (middle) and with a university degree (high).

METHOD

Population

All students were in the Northern Region for Higher Education (higher education in Sweden was at this point divided into six geographical regions) in 1984 and were admitted to separate single-subject courses as distance students, according to a special student register. The number of students who answered the questionnaire, which was the method used in this study, amounted to 1,280 persons or 79.5 per cent of the total student population.

Questionnaire

The questionnaire was based on the motives and values described above of bipolar and approximately equidistant rating scales.

Statistical treatment

Arithmetic means were computed for the various groups and they were subsequently analysed by means of multiple analysis of variance. When this analysis indicated reliable differences it was followed by a stepwise discriminant analysis in order to locate found differences. Detailed statistical data (multivariate parameters and significance tests) are not included here.

RESULTS AND DISCUSSION

The results of the discriminant analysis show that all three motives (working life > social > education, in this order), contributed significantly to the difference between those who complete their studies ("Normals") and those who break off their studies (drop-outs). However, supplementary information is obtained if a differentiation is made according to educational background and age within the groups. Table 1 shows how the different motives contribute to differences in educational levels (upper portion). The motive of education is significant in both groups for persons with a middle educational background (upper secondary school). For "Normals" with a low educational background the social motive is also a significant discriminator. The bottom of the table shows the result when the groups are differ-

Table 1. Motives and values for students who completed ("Normal") and drop-outs (EB = educational background).

Student category	Motivation	Value
Normal	Education for middle EB Social for low EB	
Drop-out	Education for middle EB	Investments for middle EB Costs for low EB
Normal	Education for under 30 Working life for 30–40	Investments for under 30
Drop-out	Education for under 30 Working life for 30–40	Costs for under 30

entiated according to age groups. The same pattern is found for both groups. The educational motive is the first significant motive for students under 30 years of age, followed by the working life motive for those between 30 and 40 years of age. To sum up the motive for education is thus the first significant discriminator whether we differentiate according to age or educational background. This result would be unambiguous if those with a middle educational background were also under 30 years of age. However, this is the case since the correlation is not significantly separated from zero (r = –.048).

The discrimination order, investments > course satisfaction > costs, was obtained for values. It should here be borne in mind that the analysis is "diagnostic", that with regard to values Table 1 shows the negative "loadings" for values. A differentiation according to educational background shows that persons with a middle educational level think that they have suffered the heaviest losses regarding time and economy and that persons with a low educational level make the greatest sacrifices (costs) with regard to family and work. A differentiation according to age shows that the greatest sacrifices regarding time and economy are made by those who are under 30 years of age in the group of "Normals". The greatest sacrifices (costs) are reported by those who are under 30 in the drop-out group. This analysis of values probably gives us a supplementary, more detailed and refined picture of where the reasons for dropping out of studies should be found.

The subject area analysis results for the administrative, economic and social sector, with age differentiation in the discrimination order put education as a motive for those under 30 followed by the working life motive. Students under 30 also reported the greatest sacrifices regarding time and economy. No significance regarding motives was found for the cultural and communicative sector, but those under 30 expressed least satisfaction with the course. For the technical sector the working life motive is highly dominating for students between 30 and 40 years of age.

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A distance education publishing strategy for the 1990s

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INTRODUCTION

The British Open University each year generates more than 12 full-credit equivalents of material for its undergraduate programme alone, together with continuing education material, administrative publications, and several newspapers and newsletters. This means that some 30,000 different pages each year need to be typeset, and then printed (in volumes ranging from 10s to 1000s of copies). We are probably the largest educational publisher in Britain.

For many years we have run an in-house typesetting department which handles a small fraction of our typesetting needs. In early 1986 it was decided, as a result of a specific Government grant, to pursue the aim of producing the vast majority of our typesetting in-house within the next few years, without any overall increase in staffing. The way of doing this would be by throughgoing use, by many categories of staff, of electronic publishing techniques (or to be precise, electronic pre-press techniques).

AIMS AND THEMES

As well as bringing typesetting in-house so as to reduce external costs, a number of additional aims were identified:

- to reduce the elapsed time taken to produce course material
- to provide a more flexible mix of qualities, timescales, costs
- to allow economical re-use of material
- to maintain, or even improve, the overall quality of material

I believe that with the possible exception of the last aim, these would find general agreement among distance educators. Regarding quality, the whole issue has been extensively debated. On the one hand, it seems that typographic quality has little effect on the readability, or indeed the learnability, of course material. On the other hand, many printing traditionalists maintain an almost mystical reverence for the current output of phototypesetters. The students seem relatively unworried about quality; yet the OU is publisher in an increasingly competitive world and quality is one of the weapons a publisher deploys.

We cut this interesing but unproductive debate short by imposing the maintenance of existing quality as one of the aims. Of course, I was fairly sure by then that the incremental costs of doing this were becoming relatively small, so that it was a fairly safe decision.

THE LOCAL CONTEXT

A local phenomenon is that we have two computing divisions on campus, whose responsibilities are beginning to overlap:

- Academic Computing Services, who run a cluster of Digital Equipment Corporation VAX/VMS systems: traditionally they have supported the students (via study centre terminals in the past, and now from home micros), and more recently the research community;
- Management Services Division, who run a Unisys (ie Sperry) 1100 mainframe: traditionally they have supported the administration.

The following policies had already been decided:

- that student micros would be MSDOS compatible
- that the standard for the campus data network was to be Ethernet
- that the standard for administration minicomputers would be Unix

Although these might seem local requirements, one can produce good general arguments for them.

STRATEGIC CHOICES

The main choice facing us was to decide on the general approach towards publishing systems.

Traditional Publishing Systems typically use "dumb" computer terminals linked to a minicomputer. They are not at all WYSIWYG ("What You See

Is What You Get"). They produce what is generally regarded as high-quality typography. In particular, they are very good at pagination, ie breaking material into pages, taking care of widows, orphans, etc.

Desk Top Publishing Systems are by now well known. They are typified by such systems as Aldus Pagemaker on the Apple Macintosh and Xerox's Ventura Publisher on the IBM PC. They are fairly WYSIWYG. They produce medium-quality typography and are not so good at pagination. One can regard the better *Word Processing Systems*, such as Microsoft Word on the Apple Macintosh, as a special case of these.

Corporate Publishing Systems have hardware based on Unix workstations (very high-performance microcomputers from companies such as Sun), and software based on the WYSIWYG philosophy with "real-time" response. Typography is not always as good as it should be, but software in this arena is evolving fast, and is undoubtedly the way of the future.

I believe that distance educators should reject the approach of the Traditional Publishing System. These are mainly designed for use by trade typesetters and printers, and so have not taken into account the fact that in an in-house situation, most keying will be done by the originators of the material, not by compositors. They impose too large a barrier between author and final output. They are also hard to link in to the broader thrust of one's IT strategy; in particular their networking is usually ad-hoc if it exists at all.

Thus the choice comes down to Corporate Publishing Systems or Desk Top Publishing Systems. If one is running a small distance education operation in an "IT-rich" environment such as in a major computer company, then it makes most sense to provide each author with a desktop workstation and Corporate Publishing System software. However, most of us are not so lucky. So is the choice to go Desk Top? Well, maybe: that depends on your perception of the quality factors. Many organisations will, I am sure, go this way, and accept the (possibly only temporary) decline in quality compared with traditional methods.

We chose a middle route: we intend to fuse the use of a Corporate Publishing System (for our compositors, illustrators and designers) with a Word Processing System (for our authors, secretaries, and editors). This will undoubtedly for us be by far the most cost-effective and yet flexible route to get the quality we want; on the other hand, it is not an "off the shelf" solution. I would recommend that you consider it only if your organisation is fairly competent at computing and local area networking.

But the term "Word Processing" covers a wide range of system. To start with, one has to specify a hardware type. We chose to focus on two types, the IBM PC (and its clones), and the Apple Macintosh. This was a political necessity in our environment, but it is a potentially messy situation. However, we have taken the sting out of the decision by standardising for software on Microsoft Word, which has compatible versions on both machines.

Given a "green fields" situation, would one choose Apple or IBM? (I do not believe that there are any other strategically sensible choices.) As we say: "Apple is better, but IBM is safer". (It was until recently, anyway.) If one is going to transfer material into a Corporate Publishing System, the IBM route is quite sensible; but if one is trying to use IBM kit for a Desk Top Publishing System, it is not sensible. The problem is the lack of graphics capability (the text capability of products like Ventura is perfectly adequate).

A pure Apple Mac route is fine in isolation; but slightly less good when it comes to linking to mainframes, and compatibility with student micros (now or in the future).

One also has to consider the technical strategy for output; this is the famous "Page Description Language" debate. But if you accept the requirements of (a) few barriers between authors and typesetters, and (b) various grades of output which are all compatible (eg 300 dot/inch for drafts, 1200 dot/inch for final phototypeset work), then the only answer is PostScript.

THE DEVELOPMENT PLAN

The project is divided into annual Phases. In each Phase, we buy a large number of Macs and PCs, as well as specific equipment: in Phase 1, we bought two typesetters; in Phase 2, a pilot Corporate Publishing System; and in Phase 3, systems for electronic origination and processing of artwork.

We also have to ensure that specialised requirements, such as music, chemistry, and mathematics, are catered for. The only real problem is maths, since we have a considerable maths typesetting requirement. Currently it looks as though the TeX package, though not (yet) ideal, is the only sensible way forward; and we have standardised on this for our authors, while reserving judgement on the final shape of the maths Corporate Publishing System.

RELATIONSHIP WITH OTHER "PUBLISHING" TECHNOLOGIES

At the same time as our electronic pre-press project is going on, the OU is continuing to apply computers to various aspects of the teaching process. Systems under development include videotex, computer conferencing/electronic mail, and CD-ROM. These are often, confusingly, called "electronic publishing" as well. So how do these technologies fit in to a publishing strategy? At a simple level, the fact that we are generating and storing text in a fully electronic way gives us a basic capability to transform it to fit any other technology; but there are deeper answers.

VIDEOTEX

Although many of the early workers on videotex saw it as merely a screen-based version of paper publishing, reality soon dawned. Videotex has little to do with publishing, but a lot to do with providing access to on-line services — registering for courses and so on. Thus there is no value in considering the requirements of videotex when developing textual material.

COMPUTER CONFERENCING

I see computer conferencing as an electronic enhancement of the tutorial process, not as a dissemination medium for published material. At present, the public telephone network is too slow to allow effective large-scale dissemination of published material; and in any case, people seem unwilling to read material from screens of the current functionality. No doubt these factors will change, but not for several years as regards the population of distance education students.

CD-ROM

The situation with CD-ROM is somewhat different:

- CD-ROM is a publishing medium already (for database material)
- CD-ROM drives are likely to be adopted relatively early by owners of home micros

Thus I believe that we have to consider the implications of CD-ROM on our strategy. One strand of thinking, in Britain, at least, claims that it is essential to use SGML, the Standard Generalised Mark-up Language, as a method of "tagging" material for production on CD-ROM. However, their case would be much stronger if any of the successful CD-ROM production houses were actually doing this. Nevertheless, I have superficially accepted the argument; conveniently, the cost of doing so was effectively nil, for this reason: the typical Corporate Publishing System software house is American and wants to sell to the Department of Defense, who in their wisdom insist on conformance to GML, a precursor of SGML.

I would still see CD-ROM as serving a niche role in the publishing of reference databases, rather than being used for general text material. I realise that at the time of writing, this is an unfashionable view, with the recent announcement of Hypercard on the Mac, and the rediscovery of Ted Nelson's Hypertext concept — obviously destined to be discovered once per generation. Last time it was called videotex. I don't believe that this way of getting general material off screens will appeal to students. In any case, a style-based word processor makes it relatively easy to produce hypertext if needed.

RELATIONSHIP WITH OTHER INSTITUTIONS

CO-PUBLISHING

The use of electronic publishing techniques do not just turn one's in-house composition operation into a more efficient version of outside typesetting houses: many of the benefits come from a close integration with the authoring side. Since most publishers are not yet geared up to routinely receiving manuscripts on disc, let alone networking, this is likely to mean a change in the relationship between us and a publisher interested in jointly publishing material. In practice, it could mean that we ourselves typeset the material rather than introducing a third company into the equation.

CO-OPERATIVE AUTHORING

By this I mean the collaboration of authors at different institutions in the creation of educational material. It is an area fraught with the dangers of overkill by IT experts and psychologists. Some argue that nothing can be done until a completely new type of word processing system is introduced; and certainly the current word processing tools leave something to be desired in this area. Others are blithely constructing collaborative projects, assuming that the world is already wired up with high-grade communications networks.

The truth, as usual, lies somewhere in between. Let's suppose that two of you want to co-operatively author a course from your respective institutions. If you both have "hard-wired" access to either a world-wide electronic mail service such as Dialcom, or the world-spanning academic "metanetwork" consisting of ARPANET, JANET, EARN, CSNET, and six or seven others, then you have the basic wherewithal. In other words, you can exchange raw text.

If you want to exchange more than text, say diagrams, drafts with layout, or finished material, then you have to agree on some common "de facto" software standards. (I am afraid that there are no magic international standards that fix all this up for you.) PostScript is the only sensible standard for finished material; for drafts you should use one of the more sophisticated (style-based) word processing packages such as Microsoft Word or TeX. Diagrams work best on a Mac.

I hope that this paper will encourage you to think more systematically about the IT tools you will need in order to have a distance education publishing strategy fit for the 1990s. You probably won't come to exactly the same conclusions as we did; but I hope that enough of us come to the same sorts of conclusions that the technology doesn't become a barrier to collaboration just when a number of the other barriers are breaking down.

Reconceptualising and revaluing distance education through the perspective of self-direction

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INTRODUCTION

As a form of education and as a field of applied scholarship, distance education has generally been characterised and justified with reference to *traditional* — "face-to-face" (Keegan, 1980) or "contiguous" (Moore, 1972) — educational events. It is in the context of such events that distance education is generally described and evaluated, and it is in terms of the perceived limitations of traditional education that distance education is generally advocated (ref., e.g.: Cropley & Kahl, 1983; Gough, 1984; Keegan, 1986; Misanchuk, 1982; Pagney, 1983). Such comparisons by adopting traditional education as the standard, imply and reinforce belief in its superiority over distance education (Bagnall, 1987a). This mind-set must bias educational decisions against providing distance education opportunities.

A radically different conception and valuation of distance education may be obtained by adopting, as the educational standard, the ideal of the fully autonomous individual learner. This standard arises from the central cultural (including educational) importance of individual autonomy or self-directedness in the Western, liberal, democratic tradition (ref., e.g.: Chené, 1983; Moore, 1983a; Wedemeyer, 1981). Accordingly there is a massive body of scholarship on self-direction in education (including distance education) as both a normative process and a normative goal (e.g.: Brookfield, 1985; Dearden, 1975; Gibbs, 1979; Lewis, 1978; Phillips, 1975).

EDUCATIONAL EVENTS

Important to an adequate understanding of educational self-direction is the perspective of the educator as adopting a *role* position — that of intentionally controlling (at least partly) appropriate sequences of learning (Bagnall, 1987b). It is evident that the role may be shared between the learner (acting as the "internal educator") and another person (an "external educator"). There is a spectrum of educational control from events that are, theoretically at least, entirely under the individual learner's control (who is then a fully self-directed learner) to events that are, assuming an entirely passive learner, entirely under the control of an external educator. This latter, fully heteronomous type of educational event is generally taken as the ideal standard in analyses and studies of distance education events.

However, it is the (idealised) self-directed type of event which is here taken as the appropriate educational standard. This idealised type will exhibit essentially instantaneous communication in its transactional processes between the learner as a learner and as an internal educator as well as full self-awareness, honesty and responsiveness with no barrier to communication between the two roles or to the learner's desired environmental perception. Any educational event should then be evaluated by the extent to which it attains this ideal.

Any fully self-directed educational event will include: (1) a *learner,* (2) a controlling (internal) *educator role,* (3) some appropriate *learning goals* of the internal educator, (4) some appropriate *interventions* by the internal educator, directed toward the achievement of these goals, (5) a learning *environment* which will be selectively manipulated (as educational "content" or "curriculum") by the internal educator through these interventions, and (6) some measure of learner *success* in the achievement of the learning goals.

To the extent that the educator role is shared by the learner (as internal educator) with another person (an external educator) so the conscious control of the intentional learning is passed to that person.

EDUCATIONAL DISTANCE

Against the standard of educational self-direction, the externalising of any part of the educator role may be seen as imposing some *distance* between the external educator and the learner (as both internal educator and learner). Importantly, this (essentially *perceptual*) distance may arise in *any* educational event — traditional or distance. It may be either: (1) *"environmental distance"* (between a learner and perceived key environmental elements — "resource materials", etc.), or (2) *"communicative distance"* Moore's (1983a) "transactional distance" (between learner and external educator). Communicative distance may be mediated by various environmental elements, and expressed in three forms: *spatial, temporal,* and *psychosocial* distance. Psychosocial distance embraces various forms of intersubjective *difference,* such as those of values, maturity, beliefs, intelligence, personality, and emotional states. Spatial and temporal distance comprise the standard conception of educational distance (Keegan, 1986; Moore, 1983b; Perraton, 1983), but may also be evident in environmental distance.

Psychological distance (or intrasubjective incongruence) between the learner as a learner and as the internal educator, may arise under *internal* educational direction; for example, when distance is created by limitations to self-awareness, to honesty with oneself, or to responsiveness to one's situation and condition.

While none of these forms of distance is intrinsically either desirable or undesirable, any of them may *become* educationally limiting through instances of the following types of sub-optimal conditions: (1) perceptual *inaccuracies,* (2) *time delays* in communication transmission or image perception, and (3) perceptual *noise* — a masking of the message or image by other perceptual features (both process and object). Perceptual inaccuracies and noise are influenced by the type, quality, and balance of the perceptual or communicative channels that are involved — aural, visual, tactile, olfactory, gustatory, kinaesthetic, chronemic, or proxemic (Tubbs & Moss, 1983). Although normal verbal communication draws essentially on aural and/or visual channels, in "nonverbal" communication and in general environmental awareness most channels are likely to be in simulataneous use.

Problems with educational distance often arise through perceptual noise and inaccuracies resulting from reductions in the number and/or the quality of the perceptual channels. However, problems arising from time delays are strictly independent of these channels.

The problems arising from educationally disadvantageous distance may be diminished by reducing the educational distance on the relevant dimensions of distance (identified above). In some cases, for example, it may be best to reduce the spatial and temporal communicative distance through the use of multiple communication technologies; in other cases the most useful action may be to reduce environmental and psychosocial distance by residential schools or similar group meetings. However, it should not be a general goal to minimize educational distance and maximize face-to-face educational elements in distance education programs. On the one hand it should not be assumed that the educational distance elements in the distance education program are undesirable; on the other hand, it should not be assumed that traditional education programs are any less educationally distant and any less desirably so than are distance education programs.

CONCLUSION

Using self-directed education as the educational standard, distance is a cluster of qualities which may occur in various combinations as a normal component of *any* educational event — whether contiguous, self-directed, or at a distance. Educational distance *per se* is an educationally *neutral* quality, which may be educationally either desirable or undesirable, depending on the circumstances of each given event. The self-educational perspective also forces more of a focus on the learner's situation, characteristics and requirements which is educationally desirable (cf. Holmberg, 1977, 1981; Knowles, 1980; Moore, 1983a; Rogers, 1983; Wedemeyer, 1983).

In adopting educational self-direction as the standard we reduce the basic structural differences between face-to-face educational events and distance education, differences which are frequently grounds for devaluing distance education.

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Distance education universities in federal states: a comparative analysis of Canada and West Germany

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A distinguishing feature of national federal systems of government is a constitutional vesting within the constituent provinces (or states, or canton, or Lander) of legislative authority for educational matters. The advantages of such decentralized authority are many and are widely recognized, some of them being: an accommodation of regional cultural diversity; responsiveness to the needs of local individuals and regions; enhanced efficiency in governmental administration; and the facilitation of participation by local citizens in political processes and decision-making directly affecting them (Bergen, 1982; Romanow, 1985).

However, few would argue that decentralized authority does not also have its disadvantages. For example, regional goals and priorities may not support well the formulation and implementation of a coherent national policy on education. And, as Romanow (1985, p. 5) points out, "Clearly, there is a pressing need for national objectives in higher education..." In addition, achieving consensus among the regional authorities and with the appropriate federal body, at best, is time consuming but may, in fact, prove to be virtually impossible if appropriate consultative mechanisms have not been built into the form of federalism which has been implemented. It is worth noting that whatever the federalist system, the issue is not so starkly delineated, however, as to entirely preclude federal "influence" of educational matters.

In university education as it has traditionally been constituted, the divided federal-regional jurisdiction has been problematic essentially only in the two aspects alluded to earlier: that is, with respect to the funding arrangements between federal and local authorities and with respect to negotiating how and to what extent national and local goals are to be supported. As substantial as these problems are, at least the geopolitical bases of the universities have been apparent and coincide with the geopolitical bases of the provinces or states. University distance education, however, is not necessarily subject to similar geopolitical constraints. This complicates the usual dilemmas arising from the divided jurisdictions. University distance education, by its nature, is meant to free students from the constraints of time and location and there is no reason (other than the jurisdictional and funding issues) to expect it to observe geographical boundaries. In fact, because distance education stands to capitalize on economies of scale, there is a natural pressure and rational argument for disregarding these boundaries. To the extent that university distance education is not bounded to geopolitical areas but serves inter-provincially, the case for regional jurisdiction over university education is less compelling. In fact, from this point of view, there is much to support the notion that the federal authority is the appropriate jurisdiction for a *fully fledged* university-level, distance education enterprise.

However, what has actually happened in practice belies the apparent nicety of this point of view. The purpose of this paper is to compare how distance education universities have come about in two federal systems: the Federal Republic of Germany and Canada. Such a comparative chronicle stands to provide some interesting insights into the provision of university education at a distance in a federal system. This account may also provide a substantive basis for speculating about the rationalization of university distance education within divided regional and national jurisdictions.

CANADIAN FEDERALISM AND UNIVERSITY DISTANCE EDUCATION

Provincial responsibility for education in Canada is constitutionally assigned by a provision within the BNA/Constitution Act (1867) which lays down that: "... in and for each Province the Legislature may exclusively make laws in relation to education..." Although the federal government has often expressed a desire to intervene in higher education, it does not have the constitutional authority to do so *directly*. However, the federal government does exert some indirect influence by virtue of the substantial revenues it returns to the provinces to support higher education. But, as Romanow (1985) has concluded, "Such arrangements leave the federal government with little influence in post-secondary policy, and with 'clumsy' steering arrangements" (p. 5). One of the consequences of such decentralization is that, with the exception of vocational training (which is viewed as being within the purview of manpower planning and hence is a federal responsibility), there is no national education policy, in general, and no national *distance* education policy, in particular. "Not unexpectedly, therefore, the conduct of all aspects of education — including distance education — differs somewhat from one part of Canada to another" (Ellis, 1986; p. 25).

Not surprisingly then, there is a great diversity over the provinces with respect to the emphasis given to distance education and to the manner in which the enterprise is carried out. Because the focus of this paper is the autonomous, university level distance education institution we will concern ourselves only with Athabasca University (AU) in Alberta and the Open Learning Institute (OLI) in British Columbia. Both AU and OLI were established by direct government action in each of the respective provinces.

In both these institutions, the operating grants are provided by respective provincial governments (although, as mentioned earlier, these are derived from transfer of payment arrangements with the federal government). The legislation behind these two institutions is silent with respect to the geographic mandates. Initially, both institutions restricted their interests to the host province, a position which the OLI adopted as a point of formal policy. There was political wisdom to this course of action because of the direct link between those perceived to be supporting the service through taxes and those receiving the service. AU, on the other hand, early on branched into B.C. by virtue of a cooperative arrangement reached with North Island College. In short order, students living in B.C. constituted upwards of one-fifth of the AU enrolments, prompting informal conversations with government officials regarding the appropriateness of serving so many out of province students with operating money provided by the Alberta government.

Subsequently, AU has had discussions internally about formally declaring itself to be "Canada's open university" but has to date contended itself by asserting its area of interest to be B.C. Alberta, Saskatchewan, the Northwest Territories and the Yukon. However, AU has no physical presence (such as regional offices) anywhere but in Alberta. Interestingly, this pressure to serve a wider geographic area has largely originated from within the University itself (although it needs to be said that services to the Yukon and the Territories is a somewhat different dynamic). There has been no substantive support for the establishment of AU as a national distance education university. In passing, it is worth noting that for some considerable time the correspondence study service provided by some of the conventional universities (for example, Waterloo and Queen's) has been offered to people right across Canada and on this basis these institutions have more of a national presence than AU.

WEST GERMAN FEDERALISM AND UNIVERSITY DISTANCE EDUCATION

The Federal Republic of Germany (FRG) is comprised of eleven Lander, three of which are city provinces. The constitution (Grundgesetz) binding the Lander together was instituted in 1949 under the direction and agreement of the allied occupation powers. Unlike in the Canadian system, a mechanism exists for the formal participation of the Lander government at the federal level through the Federal Council (Bundesrat) which consists of delegates from the Lander governments as well as delegates of the federal government.

During the 1960's there were several isolated initiatives to establish distance education in FRG but it became clear by the early 1970's that some Lander had no real interest in establishing distance education nation-wide. Their politics were to stop the establishment of a central office at a national level while simultaneously centralizing every distance education activity in their own Land. As a consequence of this, at the end of 1973 the Minister of Science and Research of the Land North Rhine-Westphalia presented to the public his plans for the establishment of a distance education university. This announcement of the foundation of a distance education in North Rhine-Westphalia came totally unexpectedly for the other Lander. From one day to the next, the discussion which had lasted for years was finished. In December 1974 the parliament of North Rhine-Westphalia passed an act founding a distance education university which would be under its own jurisdiction. Since October 1, 1975 the FernUniversitat (FeU) has been in operation.

The FeU was expected to serve three main aims (Peters 1976; p. 160):

- Supporting the reform of university teaching in post-secondary education;
- Developing a system of academic continuing education;
- Creating additional capacity for academic study.

Like the traditional universities in the FRG the FeU also is an autonomous institution with a similar system of governance.

As we have seen the FeU is a local university since it was founded and funded unilaterally by the Land North Rhine-Westphalia. At the same time the FeU is open for students from all over Germany and for students who are living abroad. In this respect the FeU is a nation-wide distance education university.

Are there ways to have a real national distance education university in the FRG? Up to now the FeU has been funded exclusively by North Rhine-Westphalia. In itself, this is nothing special because the conventional universities are also open to students from the other Lander and the Lander have to pay for these costs too. The difference is that the proportion of students from other Lander at the FeU is much higher than at conventional universities. A common financing system is possible due to the existence of the so-called "Konigstein-Agreement". But applying this model to the case of implementing a national distance education university would mean a lot of coordinating work. The university in this case would be dependent on the administration of the eleven Lander and the federal government too. This would be detrimental to the functioning of the institution.

An advantage of a national distance education university would be the opportunity to implement study centers in other Lander. This would be an advantage for those students who are living in Lander currently without study centers. A number of the Lander would in this case have to give up their politics of obstruction. Also the number of towns where the students could sit their exams would be increased. The distance education university would no longer depend on the "good-will" of the conventional universities to provide rooms for writing exams.

Participation of the other Lander in the operation of the existing FeU in Hagen is not possible under the law of the universities in the FRG. Autonomy in matters of education and culture doesn't allow for such participation. Also, participation of the federal government would be a break in the educational politics as it would not conform to the federal system. A participation of the other Lander would make it necessary to have a separate political organisation. This would mean that the FeU would have to cooperate nation-wide. In this case, the FeU would unavoidably have to give up a part of its self-administration (Gerhardt 1974).

Another possibility exists for the FeU to cooperate with other locally established conventional universities to establish a national distance education network. The FeU has such cooperation contracts with a small number of conventional universities. The aim is the reciprocal support of research and tuition. At present the FeU has concluded these cooperation contracts exclusively with universities of those Lander which support the FeU. Different political views are the main reason, therefore, that no cooperation contracts exist with universities in Lander without study centers. There are no expectations that the politics of obstruction of these Lander will change in the near future. While it continues, it is impossible for individual universities in these Lander to cooperate with the FeU. For such cooperation they need the agreement of the government of their respective Land.

CONCLUSION

In spite of the apparent advantages to rationalizing university distance education, enhancing its cost effectiveness, and providing a national presence in higher education, neither Canada nor the FRG has a national distance education university. This is also the case in Australia and the United States, two other federal states with a considerable amount of regionally based distance education. This situation stands directly in contrast to such nationally established institutions as the British Open University and the Open Universiteit of the Netherlands. Why this is so is a matter about which we can only speculate. However, from the two case studies presented here it is reasonable to argue that it is in the nature of the federal systems to preclude the establishment of a national distance education university. The Federal Republic of Germany appears to have developed "the most comprehensive and sophisticated structure of federal-state and interstate consultative coordinating agencies, not only for education but in all matters of government" (Bergen, 1982, p. 18). In spite of this, the FeU began as a regional institution and remains as such to this day in that it does not serve a national policy of university education. However, the FeU does provide extensive service across the FRG and this undoubtedly is facilitated by the comprehensiveness and sophistication of these consultative coordinating agencies. Moreover, notwithstanding the inconclusiveness of the effort, it was at least possible to discuss the rationalization of distance education at the national level. This has not been so in Canada, and again it might be attributed to the absence of an appropriate consultative mechanism.

Maybe this state of affairs in federal systems is as it should be. In Romanow's (1985) view, "... the federal role in education essentially must be supportive of provincial efforts, and not in competition with them through direct federal programming. To borrow Claude Forget's phrase, Ottawa's role should be that of a "lever and lubricant to encourage harmonization of provincial policies"; (p. 6) This seems to have been the principle followed for university distance education in the FRG, although progress seems to have been achieved in fits and starts and remains inconclusive. However, progress there has been and the opportunity for further advancement clearly exists. In Canada, on the other hand, progress has been due largely to the initiative of individual institutions. Some coordinated progress has been achieved at the provincial level — particularly in Alberta, British Columbia, and Ontario. However, some "lever and lubricant to encourage harmonization of provincial policies" has been lacking. It is interesting to speculate about what distance education in Canada might look like if such were provided.

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The potential and realities of using satellites for distance education in Western Europe

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SATELLITES FOR DISTANCE EDUCATION: "2001 SPACE ODYSSEY" OR "PIE IN THE SKY"?

Will satellites prove to be a major communications medium for distance education in Europe, or will they prove to be yet another technology in search of a role? It is argued that the value of using satellites for distance education depends not on the technology itself, but on the ability of distance educators to define appropriate trans-national educational needs in Western Europe, and on the ability of different distance teaching agencies to plan and work together quickly and efficiently.

SATELLITE PROVISION IN EUROPE

There are basically two kinds of satellites, low-powered and high-powered (the latter usually called Direct Broadcast Satellites or DBS). Essentially, though, DBS transmissions can be received directly in homes using small and cheap dish aerials, while low-powered satellites require a larger and more expensive dish, with television signals usually being redistributed by cable or terrestrial transmitters to people's homes. Satellites though can also transmit voice and data signals, using a fraction of the capacity of a television channel, and hence at far less cost, a point of particular significance for distance education.

The European Space Agency's launch rocket, Ariane, has the demanding schedule of one satellite launch a month from September, 1987 to August, 1988, of which a substantial proportion will be European satellites, both low-powered and DBS. With a 1 in 15 chance of a launch failure, a lot could go wrong before the Oslo conference. Nevertheless, there will almost certainly be a rapid expansion in satellite capacity in Europe within the next five years, from the current 21 television channel capacity to somewhere around 100 television channels (CIT, Research, 1987).

ACCESS AND COSTS

Parallelling these developments in space, there is expected to be a rapid expansion in the numbers of people capable of receiving satellite transmission in Europe, either relayed through cable systems, or through direct reception.

Low-powered transmissions can now be received on equipment costing around £1,000 (US$1,600), consisting of a 1.4 metre steerable dish, a 'black box' of electronics to convert the signal for reception on a standard domestic TV monitor, and a tuner to find the desired satellite and the desired channel on each satellite. DBS on the other hand can be received on much smaller aerials (between 0.5 and 0.9 metres in diameter). The total cost of DBS reception equipment (in addition to a "standard" domestic TV monitor) is likely initially to be around £500 (US$800), dropping eventually to around £200 (US$320).

In 1986 there were 10,000 satellite TV receivers in Western Europe. This figure is expected to rise to 1 million shortly after 1990. By 1996, 46 million (40%) of West European households are expected to receive satellite services, either directly or via cable (Tydeman, 1987). However, it will be at least 10 years before a *majority* of homes in Western Europe can access satellite transmissions, a point of significance to those distance education institutions with a genuinely open access policy.

Transmission costs range for full bandwidth television from free up-link and transmission facilities for educational users (on OLYMPUS), to £1,800 (US$2,880) an hour on Eutelsat (including transponder charges) for peak evening transmission. While not insignificant, transmission costs though will usually be minor compared to the costs of production, administration and ground support services (for a full discussion of educational satellite costs, see Bates, 1987). Neither reception nor transmission costs are likely to be a significant barrier to the use of satellites for distance education in Europe, compared with finding suitable programming, and paying for it.

HOW HAVE SATELLITES BEEN USED FOR DISTANCE EDUCATION?

Several countries outside Europe already have extensive experience of using satellites for distance education, in particular Canada, India, USA, Australia, Indonesia, the University of the South Pacific (USP) and the University of the West Indies (UWI). In addition, a number of countries have participated in Project SHARE, a series of health and education applications linking developed with developing countries via the INTELSAT system.

From these experiences, it is important to distinguish between both the media used (TV, audio, data) and the configuration (point-to-multipoint or network):

1 Broadcasting: the dissemination from one point to many points, for teaching purposes, with no return communications via satellite, (e.g. TV: INSAT, India).
2 Interactive broadcasting: one-way satellite television, with terrestrial telephone used to allow students to call in (voice only) to the broadcast (e.g. National Technological University, USA; Knowledge Network, Canada).
3 Two-way audio communication between several points, for both teaching and administrative purposes (e.g. USP, UWI, and Indonesia).
4 Two-way audio communication between several points, for both teaching and administrative purposes, supplemented by low-band graphics such as slow-scan TV or electronic writing (e.g. USP, UWI, and Indonesia).
5 Satellites can also be used for carrying electronic mail, computer conferencing, text transfer and access to remote data-bases, at lower cost than even voice communication.
6 There has been no major use yet in distance education of two-way full bandwidth television communications (video-conferencing), presumably because of the very high costs.

Satellite is rarely the only communication technology; most systems using satellites in distance education also make use of terrestrial telephone services as well. As with terrestrial systems, two key questions are: why does one need full bandwidth television, given the huge difference in cost, especially if the satellite is merely relaying lectures; and why does one need to transmit, rather than mail videocassettes (see Bates, in press, for a discussion of the merits of television in distance education).

EUROPEAN EDUCATIONAL SATELLITE INITIATIVES

There are several initiatives already underway for the use of satellites for distance education in Western Europe.

1 *OLYMPUS*. This large and experimental satellite, built by the ESA and able to cover 60% of Western Europe with a single high-powered television transmission, is due to become operational in 1989. The ESA is offering free transmission on Olympus to educational users. Because of the multiplicity of European educational institutions, ESA commissioned the European Institute of the Media (EIM) to conduct a study (Wedell et al., 1987) about how to organise an educational service on Olympus. Subsequently, ESA has appointed an educational programming committee, under the chairmanship of Dr. Alan Hancock, of UNESCO, to allocate programming. To date, the ESA has received over 170 proposals for educational programming on Olympus, of which 40 are for distance education.
2 *DELTA*. Quite independently, the European Economic Commission (EEC) is funding a large initiative, totalling £14 million (20 million ECUs), to start in 1988, to improve the technological and communication infrastructure for education and training within Europe. This project includes a proposal for a satellite-based European educational communications network, suggesting that there will be opportunities for funding satellite-linked activities within the DELTA programme.
3 *PACE*. This is a consortium of multi-national companies (including IBM, DEC, Hewlett-Packard, British Telecom, Thomson etc.), using both satellite and computer communications, to deliver a Programme of Advanced Continuing Education in Europe to companies throughout Europe, drawing on key researchers in European universities and companies. This is being funded partly by sponsorship and partly by the sale of courses, and begins in 1988, probably using Eutelsat.
4 *COMETT*. This is another EEC initiative, designed to increase co-operation between European enterprises and universities, through the joint production of courses and training initiatives. One strand of the COMETT programme request bids for the use of multi-media technology (including satellites) and provides funding possibilities for joint programmes between European distance teaching universities. PACE has already received some funds under the COMETT programme, and a consortium of European distance teaching universities and European enterprises (SATURN) has also received a small amount of funding under the COMETT programme, but not for satellite use.

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COMETT started in 1987, and is expected to continue at least until 1989.

There are therefore considerable opportunities for funding distance education satellite projects of a joint nature.

FOR WHAT PURPOSES SHOULD SATELLITES BE USED IN EUROPEAN DISTANCE EDUCATION?

It is possible to think of many different ways in which satellites could be used, but they all depend on an institution's policy regarding activities in Europe. I shall use the British Open University to illustrate the link between educational policies and satellite use (or non-use).

1. *Extension of courses beyond national boundaries.* There are two main obstacles to this at the moment. The Open University does not have the resources itself to provide the ground support, such as registration, counselling and tutorials, at a local level, to any major extent outside the UK. Secondly, it wants to work in co-operation rather than in competition with other distance teaching institutions. Through the Association of European Distance Teaching Institutions and SATURN, a policy for co-operation in credit transfer, joint course production and inter-institutional co-operation is slowly being developed, but until decisions have been made about what role, if any, the Open University will play in providing courses within Europe, we have no rationale for using a European satellite facility to support courses, and no means to provide the necessary infrastructure. Consequently, the Open University has bid for only one hour a month on OLYMPUS for broadcasting a selection of its existing programmes. As well as providing an alternative source of programming for the general public, this gives a European-wide shop window for the University. It is a very limited use of the potential of satellites, and does not support courses in any way.
2. *Joint research and course production.* Distance education courses cost a great deal to design. Given the high cost of design and production, there is great potential benefit in the design and production costs being shared between institutions who would also use the materials. Also, there may be areas where joint research activities between staff in different distance learning institutions, particularly research into distance education itself, could be developed. Satellite communication could be used to facilitate such activities, allowing for the exchange of materials and conferencing. However, no such co-operative agreements are yet in place. Until they are, the Open University cannot commit itself to using satellites for this purpose.
3. *Establishing a distance education communications network.* Satellites could form the base of an inter-institutional communication network (or even for communications within a system). Again, though, without a clear strategy for co-operation with other distance teaching institutions, it is not possible to determine either the role or the likely amount of traffic for satellites in networking.

In the meantime, while inter-institutional co-operation between the established European distance teaching institutions is slowly building up, new organisations such as PACE are stepping into the gap. PACE is specially designed to exploit the European-wide coverage of satellites and the funding requirements of EEC initiatives. It is interesting to note that only 40 of the 170 Olympus proposals were for distance education, and few of these came from the established European distance teaching universities. This suggests that there is a need for greater urgency on the part of the established European distance teaching organisations to work out how they can best work together, and how satellites might help in that co-operative working.

CONSTRAINTS

It is therefore possible to identify a number of constraints hindering the greater use of satellites for distance education in Europe.

1. A policy regarding trans-national distance education in Europe is a necessary pre-condition for any distance teaching institution before it can decide whether to use satellites. In parallel with defining the roles of each institution beyond its national boundary, there is also a need to identify clear educational needs and target groups for which the use of satellites would be appropriate. This requires careful market research into educational needs that transcend national boundaries, cultures and languages. Co-operation between distance education institutions is likely to be essential to maximise the benefits of using satellites.
2. Success is likely to go to those courses which use a combination of technologies and course design appropriate to a European-wide audience. This suggests that as far as the use of satellites is concerned, there is a need to design courses specially for a European-wide audience, rather than the use or even adaptation of existing courses. It also suggests the need for new types of course design, built round satellite and other technologies.
3. Joint production of courses intended for international use in Europe is likely not only to reduce the cost to any single institution, but also to avoid cultural ethnocentricity.
4. Experience in using broadcast television and radio for distance education indicates the need to provide adequate print and tutorial support and follow-up, and the need for a clear educational

rationale for using television, audio or data, for any satellite initiatives.

5 The supporting costs, and especially the cost of production, are likely to be far greater than the actual transmission and reception costs of satellites.
6 The restricted access to satellite reception for certain target groups must be remembered, particularly where open access is paramount.
7 Governments will need to ease PTT control over access to up-links and tariffs if educational use of satellites is to be encouraged. In particular, educational institutions need to be able to up-link directly from their sites.

As with other technologies, educational goals need to be determined first, but are inevitably influenced by the availability of a technology. Just as it would be a mistake for satellite technology to determine educational priorities, it would also be a mistake for distance education institutions to ignore the potential of satellites. Successful use of satellites will require some adaptation of our teaching methods, but at the same time should allow new target groups to be reached.

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Tutor and Course Coordinator — hierarchal relationship and mutual perceptions

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INTRODUCTION

The Open University of Israel (EU — Everyman's University) was established in 1976 to enable capable students from distant areas or without a matriculation certificate to study for a BA degree. The structure of the university as well as its study system were inspired mainly by those of the Open University in Britain. EU awards a Bachelor Degree in either Humanities and Social Sciences or in Natural and Life Sciences to those students who accumulate 18 credits. EU has about 10,000 students each semester. These students are registered in over 200 courses, most of which award the students one credit for their successful completion.

THE LEARNING-TEACHING SYSTEM

As the EU's learning-teaching system is based mainly on the self-study distance method, printed course material is its main medium. "The purpose of the written text is threefold: to present the student with source material; to replace the lecture, guiding the student to examine various approaches critically and analytically; and to encourage the student to think in an independent manner by means of well designed questions and learning tasks within the text" (Guri, 1986).

To encourage active learning (beyond the passive reading of the course material) each course includes several Computer-Marked Assignments (CMAs) and Tutor-Marked Assignments (TMAs). CMAs consist of multiple-choice questions which the students answer on a computer-optical scanning card. TMAs contain open-ended questions the answers for which are examined by tutors. To be eligible to sit for the final examination, a student must complete at least 50% of the CMAs and TMAs. These together account for approximately 40% of the course grade. The remaining 60% of the course grade derives from the final examination. Final examinations are conducted at one of several regional examination centers around the country.

In addition to being provided with the written material students are assigned to tutors, usually in or near their home town. These tutors constitute an important element in the learning system. Students may contact them by phone at designated hours each week and meet them in non-obligatory group meetings or tutorials held in the evening about once every three to four weeks at the regional study centers. In these informal meetings difficulties in the material or the assignments are explained, individual guidance is given, and group discussions are led by the tutor. As already mentioned, tutors are also responsible for evaluating the TMAs.

This complex learning-teaching system must be precisely coordinated. The instructional or course coordinator (CC) is the person with that heavy responsibility. Each course has one CC whose obligations are: (1) to interview and select the best tutors he can find, (2) to write new CMAs, TMAs and examinations for each semester the course runs, (3) to determine the number and schedule of TMAs, CMAs and group meetings, (4) to supply the computer and the tutors with the answers for the CMAs and the TMAs respectively, and (5) to guide the tutors in every aspect relevant to their work, specifically with regard to the evaluation of TMAs.

This learning-teaching system is based on a hierarchal structure in which every level has specific academic, didactic and organizational responsibility towards its subordinate level. At the highest level are the staff members — usually PhD's — who develop the course material. The CC is next in the hierarchy, followed by the tutors in the third level.

THE PURPOSE OF THE STUDY

The smooth running of this multiplex system necessitates regular evaluations. These are carried out by the Evaluation Department of the University. The present study was part of one such general evaluation. Specifically, we were interested in the different manner in which tutors and course coordinators perceive various elements of the learning-teaching system and particularly the way in which they perceive each other. The question of mutual perception is a very important one in a hierarchal system: Is the system perceived as hierarchal by members of its different component levels? Are the CCs seen as authorities by the tutors? Do tutors accept CC authority with regard to academic, didactic and/or organizational questions? Do the CCs use their hierarchal advantage over the tutors? The attitudes and mutual perceptions of the tutors and the CCs are important because any discrepancies between the planning and organization of the system and the way it is reflected in the attitudes of its members may hinder its efficient functioning.

METHOD AND PROCEDURE

THE SAMPLE

At the end of Semester 17 questionnaires were sent to 150 tutors and 44 course coordinators of Introductory and Intermediate Courses in the Social Sciences and Humanities. Twenty-seven CCs and 78 tutors answered the questionnaires. Of the CCs, about half have or are studying for their Master's degree, while the other half are studying for their PhD. Among the tutors only 25% are studying for a PhD.

THE QUESTIONNAIRES

The questionnaires for tutors and CCs were nearly identical. The tutors answered 66 multiple choice questions (composed of 155 variables) and the CCs answered 61 (composed of 149 variables of which 148 were similar to those of the tutors). Each questionnaire was divided into the following sections: personal questions (age, experience, etc.), evaluation of the study units, evaluation of the quality and grading of CMAs, TMAs and final exams, evaluation of the group tutorials, and evaluations of tutor-CC interaction and of tutor-student (or CC-student) interaction.

RESULTS

We will report here only about one small section of the questionnaire results — that concerning tutor-CC mutual perception (about 45 variables).

TUTORS' TRAINING

Tutors and CCs were asked about the necessity of tutor training and its timing and content, as well as the mode of training and the type of trainer. There was no disagreement between tutors and CCs regarding the need for training before beginning work, though most of the CCs (91%), but less of the tutors (64%), believe they need on-the-job training as well. The CCs are more convinced than the tutors about the importance of tutor training in each one of four areas: course material, background material, didactics, and facts about EU. Seventy-seven percent of the CCs, but only 55% of the tutors think that it is important or even highly important to train the tutors in the course material. For the importance of teaching didactics the percentages are 79% and 55%, respectively.

While most of the CCs hold the view that the CC must be involved in the training of the tutors in the course material (58%), in the background material (50%) and in didactics (64%), the tutors would prefer that those who wrote the course material or outside lecturers train them (the comparable percentages for the tutors are: 28%, 30% and 34%). In contrast to the CCs who have no preference concerning the mode of tutor training (written, individual face-to-face interaction or group training), most of the tutors favor organized group training (63.8%) with only a minority (11.6%) inclined toward face-to-face private interaction with the CC.

To summarize, it seems that the CCs believe that the tutors need more training than the tutors themselves think they need. Furthermore, the CCs are convinced they can provide the purported needed training while the tutors prefer more academically advanced trainers for that role.

THE CC's CONTRIBUTION TO THE QUALITY OF THE COURSE

CCs are considerably free to change the emphasis of different components in the course through the content of the TMAs, CMAs and exams, and through the group meetings. In addition, they can add subject matter, delete material and change it when they feel it is necessary.

CCs and tutors were asked whether CCs are entitled to augment, delete or change the course material (which they did not write), as well as whether they actually do such revising. Tutors were more permissive than CCs concerning CC's right to emend material (33.3% vs. 16.6%) and to update it (57% vs. 24%). With regard to the actual situation, many more CCs than tutors believe they actually do change the course emphasis through the assignments (64% vs. 37%), through the tutorial meetings (52% vs. 20.9%) and through the final exams (48% vs. 29%). Thus, although the tutors are more willing than the CCs to permit the CCs to become involved in what should be taught, they also believe the CCs take less advantage of this privilege than the CCs themselves think they do.

TUTOR-CC INTERACTION

Tutors and CCs were asked about the type and frequency of the interaction they have with each other. A higher percentage of CCs than of tutors claim such interaction concerning: subject matter (88% vs. 45%); problems with assignments (76% vs. 55%); TMA and CMA evaluation (79% vs. 43%); students' personal problems (40% vs. 27%); students' administrative problems (48% vs. 25%); and problems regarding tutorial meetings (86% vs. 34%). Thus, the whole actual interaction between tutors and CCs is perceived as much more frequent by the CCs than by the tutors.

Similar discrepancies are expressed about the initiation of tutor-CC interactions. When asked who initiates the interactions (CC, tutor or both), many tutors answered that they initiate the interaction (e.g. 45% concerning subject matter, 53% concerning assignments, 52% concerning the evaluation of the assignments), while only a small percentage of CCs believe the tutors are the initiators (4.5%, 30% and15% respectively). CCs believe that they usually initiate the interaction or at least that it is a joint initiative.

With regard to the authority the CCs have toward the tutors, they perceive themselves as having such authority concerning EU's administration (90.0%), course subject matter (85.7%), and didactics (90%). However, far less tutors perceive the CC thus (65%, 45.2% and 33.3% respectively).

SUMMARY AND CONCLUSIONS

The tutor-CC relationship constituted only a small section of a broad and detailed survey concerning the different components of the learning-teaching system in EU. Overall, there is a considerable gap between the observations of the tutors and their CCs which appears to be related primarily to their disparate perceptions of the role of the CC as a counselor for the tutor. It seems that CCs perceive themselves as being high in the course team hierarchy and capable of training, teaching and supporting the tutors. However, this perception is not shared by the tutors themselves. They perceive the CCs as quite similar to themselves and prefer to be guided and trained by more academically advanced PhD staff members.

The gap between tutors and CCs is not limited only to role perception and to the way tutors evaluate their CCs. Both tutors and CCs perceive and interpret the actual situation quite differently. Apparently CCs perceive the tutor-CC interaction as they think it should be — frequent interactions initiated by themselves. However, from the tutors' point of view, the reality is less ideal: infrequent CC-tutor encounters, initiated mostly by tutors. Thus, tutors not only express lack of confidence in the CCs, they also feel isolated.

It seems, on the whole, that the hierarchal structure planned by the University is perceived as such by the CCs but not by the tutors. This situation should be a matter of concern for EU for it undoubtedly does not contribute to the tutors' and CCs' motivation nor to the teaching-learning process. However, we need more study before any remedial steps can be taken: Whose perception of the reality is more accurate, the tutors' or the CCs'? Are CCs conscious of tutors' needs? Are they capable of answering those needs?

There is no doubt that the roots of some of the problems lie in the way the hierarchy is implemented into the system. Although on the average CCs are academically more senior than tutors, it often occurs that tutors are more qualified than their CCs. Frequently CCs are advanced MA students while the tutors they hire are already studying towards their PhD. Moreover, there is no guarantee that the CCs have had more didactic experience than the tutors or more experience as EU staff. On the contrary, often the tutors have been working for more years in the EU teaching system and thus have greater working knowledge concerning distance education, the structure of the university and even the specific written course material. Such a situation can contribute to the attitudes expressed by the tutors in the present study.

The question of hierarchy and authority is not limited to CC-tutor mutual perceptions and interactions. Similar questions should be asked with regard to the top level — the PhD staff members responsible for the written course material, and with regard to the bottom level — the students.

Distance educators and distance education institutions are becoming more and more sensitive to students' needs. Various student support systems have been proposed and implemented. "In many ways tutors appear to be exposed to the same type of isolation as Open University students, and need both academic and moral support to function effectively and confidently and to maintain their morale" (Student Research Centre, Institute of Educational Technology, O.U., 1986). For the sake of the students, those who support them — their tutors — must feel they are supported too.

Portable computers and distance education

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INTRODUCTION

Students who take their academic programs on the campus of a university or college, or at a secondary or primary school have a number of advantages over peers who must acquire their education through correspondence or distance education. Students who can "attend" school have constant contact with teachers and fellow students and these contacts are an important component in learning. Also, these students have access to all of the resources of the school and surrounding community such as libraries and laboratories.

Although students learning through distance education will always be at some disadvantage, it is possible to minimize these disadvantages with inexpensive communications and microcomputer technology.

At the Univesity of Waterloo we are constructing an integrated computer system which will allow all students on campus to use microcomputers in their academic program, wherever and whenever such use is appropriate. We are now expanding this system to the distance education program. Students in such programs will be able to use the data communications capability of the telephone system in conjunction with microcomputers

i) to communicate with their teachers and fellow students,
ii) to have immediate access to teaching materials such as lecture notes, laboratory sessions, and assignments,
iii) to have access to the tools which are commonly made available to on-campus students,
iv) and to have access to many of the information sources easily accessible to on-campus students.

The remainder of this document describes:

i) The scope and general approach of the current distance education program at the University of Waterloo,
ii) the expanding role of the microcomputer in education,
iii) the current integrated system at the University of Waterloo,
iv) the plans to expand the integrated system to include correspondence and distance education programs.

THE DISTANCE EDUCATION PROGRAM AT WATERLOO

Teaching by correspondence began at the University of Waterloo in 1968 with an initial offering of four Physics courses. Many of the early students were teachers wishing to upgrade their qualifications without taking leave of absence from their position. Waterloo now offers over 300 different courses in some 50 different disciplines, and three degrees (in Arts, Science, and Environmental Studies) can be earned entirely by distance study.

There have been over 190,000 registrations in correspondence courses since the inception of the program, and the University of Waterloo has one of the largest university credit distance education programs in North America. Current annual course registrations are about 20,000, which represents about a fifth of the total university enrolment.

Although Waterloo has a reputation for "high tech", especially in computer science and engineering, its distance program has not reflected this emphasis, either in the type of courses offered (which are mainly in Arts), or in the instructional approach adopted. Distance courses comprise audio-tapes, a variety of print materials (course notes, textbooks), video cassettes and special kits where necessary.

There is also a set of from four to six assignments which must be returned for marking at regular intervals throughout the term. A major difficulty arises from the slow "turn-around" time for assignments and lack of timely feedback to students on their progress in the course.

THE MICROCOMPUTER IN EDUCATION

Microcomputers play an ever-expanding role in the educational process. The computer is used in a variety of ways:

i) as a communications device and a mechanism for delivering educational materials,
ii) as a productivity tool,
iii) as a base for developing specialized learning tools,
iv) and finally as an object of study.

THE MICROCOMPUTER — A COMMUNICATIONS DEVICE

The microcomputer in conjunction with modern communications technology provided by the common carriers is an effective communications mechanism.

Teachers may send assignments, lecture and laboratory notes, data-bases and many other types of teaching materials to students by depositing these materials in a central file server. These "notes" may be made generally available to a class or sent to a restricted group. The students may then make electronic and/or printed copies of these notes for their personal use. Such mechanisms are often called bulletin boards or electronic distribution systems.

Students may reverse the process described in the previous paragraph and send assignments electronically to the teacher for detailed criticism, discussion and marking. Such electronic transmissions minimizes the time needed to effect communication between students and instructor.

Electronic mail systems are a special version of the electronic distribution systems just described. These systems allow private communication between individuals and between individuals and groups. Facilities also exist for immediate simple reply to a message, forwarding mail, registered mail and other functions similar to those offered by conventional mail systems.

Conferencing systems are another effective means of group communication using the computer. All messages sent to a conferencing system are time-stamped and displayed on an electronic bulletin board in different categories, and messages placed on the board can never be [illegible]noved. Users of a conferencing system can scan the board for information and/or place their own queries and responses on the board.

THE MICROCOMPUTER — A PRODUCTIVITY TOOL

The microcomputer is an excellent general-purpose productivity tool. There are now many software programs including writing aids such as word processors and text formatters, spelling checkers and thesauri; calculation aids such as spreadsheets; and information management tools such as data-base systems to assist the student.

Students can use the writing aids to make the preparation of reports and essays a more pleasant task and can concentrate on the content rather than the appearance of the finished document.

Aids such as spreadsheets are extremely useful in almost all courses which require various tabular calculations. Because of their automatic calculation capability they make excellent tools for simulating experiments and for checking postulates (so-called "what-if" questions).

Information management tools allow the student to develop personal information systems and to analyze data created by the student or provided by the teacher.

THE MICROCOMPUTER — DEVELOPING EDUCATIONAL MATERIALS

Educational materials can be developed using the tools described in the previous section. Students can then use these tools to explore these educational materials.

Word processors can be used to prepare materials for distribution, students can often use the same word processor to return modified materials to the teacher.

Spreadsheets have been found by many teachers to be excellent simulation tools allowing the student to explore the consequences of changing the parameters of a problem.

Teachers can purchase or create data bases and thus allow students to make extensive analyses. Students will not need to be guided to a preconceived set of conclusions but may gain significant insights.

Many specialized educational software systems may be developed for historical simulations, and simulations of natural disasters and laboratory experiments which are too expensive or inaccessible. Such simulations are very important for distance education students who do not have access to laboratory facilities.

THE MICROCOMPUTER — AN OBJECT OF STUDY

The microcomputer can also be an object of study in its own right. Students can study the many different application programs now available and thus become more knowledgeable users of the computer. They can also study Computer Science, the implementation and analysis of algorithms.

THE INTEGRATED SYSTEM AT THE UNIVERSITY OF WATERLOO

INTRODUCTION

At the University of Waterloo we are conducting a research project into the use of portable computers in education; this project is called Project ARIES — the University of Waterloo Portable Computing Project[2, 3, 4]. As part of this activity we are developing networks and software so that students at the University of Waterloo may use powerful portable microcomputers (sometimes call lap portables) anywhere on or off the campus and yet have access to extensive software and data, high-speed and high-quality printers, and centralized file storage. It is anticipated that the primary function of the network will be to allow students to "fill" their computer with software or data, to "dump" their finished work onto printers or plotters or into permanent mass storage, and to communicate with the faculty and their peers.

As this project develops it is expected that more and more students may wish to obtain lap portables and use them whenever and wherever a computer would be a suitable tool. Computers will become common tools in all courses not just a requirement of specific courses; we will be moving from course-orientated to effective personal or student-orientated computing.

Our hope for the long-term is that students will carry a fully functional lap portable computer which will:

i) be light-weight,
ii) operate from solar cells,
iii) be as compact as a regular-size three-ring binder,
iv) and be able to store and retrieve all software and data using a wireless network.

Although this is only a hope at the moment, we believe that such a time is not far away. For example the electronic calculator has evolved from a $1,000 desk-top model the size of a typewriter to a $5 model the size and wight of a credit card in just 15 years. Several manufacturers are producing portable computers which come fairly close to providing the capability we have already described at the beginning of this paragraph.

If we are to use computers in this mode of operation, then it is necessary to provide an infrastructure that will support both wired and wireless high-speed, high-volume data communication; this is one of the goals of this research project. Of course if this portable computational power becomes commonly available, then the way in which we use computers in education and business could and will change dramatically.

CURRENT STATUS OF PROJECT ARIES

Currently we have 350 lap portable computers which are distributed to students in various courses in different faculties. The students use the computers in their courses and help us to evaluate the concept of portable computing in a university setting.

In order to provide file storage, printing and communication facilities for these portable computers, we have installed a computer communications network across campus. Students can go to ten widely dispersed points on campus (called Aries Service Centres) to fill their microcomputer with software and educational materials or to dump accumulated data into more permanent file storage, onto printers or to communicate with their peers or teachers. The network is being enhanced to provide other services essential to the long-term success of this project.

EXTENSION TO DISTANCE-EDUCATION PROGRAMMES

INTRODUCTION

We are planning to extend the portable computing concepts in Project ARIES beyond the campus of the University of Waterloo. In this way we can service distance education programs and hence provide the distance education student with an educational setting which is closer to that experienced by students on the campus. Any modifications created for distance education will be integrated into the current system developed for Project ARIES, so that the faculty and students will not have to learn to use two network systems. Such integration should make the faculty more productive in the development and distribution of teaching materials to both local and distance education students.

The services that will be provided for distance education students will be somewhat different than those for students on or near the campus. We expect to provide the following facilities to support those services:

i) an ability to handle a large number of simultaneous calls from remote computers through a public data network,

ii) a conferencing system so that students can communicate in an informal way with their peers and teachers,
iii) an electronic mail system for private communication,
iv) a file transfer system so that students can submit electronic copies of assignments and receive new educational materials.

RESEARCH OVERVIEW

In order to provide the environment necessary for effective use of portable computers in distance education a number of different activities must be completed successfully. The next few paragraphs identify and describe these activities.

Courses will have to be identified which will be amendable to "computerization", and arrangements will have to be made with faculty members to prepare or modify these courses. Such courses could be from the distance education program at the University of Waterloo or other universities or colleges. The first course offerings will originate at Waterloo as this will minimize the logistics problems in establishing the portable computing environment. Initially, CS100 a course in microcomputer applications will be chosen, since it has a high degree of computer content and is likely to be quite popular. CS100 is described in more detail in.(1) This course should provide a thorough test of the remote portable computing environment.

A number of portable computers will have to be obtained for distribution to distance education students. Since this is an experiment we should not expect these students to purchase their own computer. Desktop models of microcomputers could be purchased for this project but portable computers offer several advantages:

i) most portables today have capabilities comparable to those of a desktop model and are quite adequate for this project,
ii) shipping a portable computer to a student is much easier,
iii) because the computer is portable, students will be able to be more mobile and even learn while on vacation or moving between jobs,
iv) and because of the portability factor, students will be able to use the computer in a large variety of learning situations, even outside their course.

The campus network for Project ARIES will have to be modified to handle long-distance data communication using Datapac and the value-added iNet 2000 Service.[5] Datapac is the Canadian public data network which allows long-distance data communication between computers at 300, 1200 and 2400 baud over the telephone system. Datapac is an X.25 network and is similar to Tymnet and Telenet in the U.S.A., Transpac in France, and P.S.S. in the U.K. The iNet 2000 service has been added to Datapac to provide appropriate user interfaces and connect users to various service providers. This service permits data communication over Datapac from any telephone in Canada.

The feasibility of providing this service has already been proven but extensive work needs to be performed to make it function in combination with a local area network environment.

Various communication systems such as electronic mail, bulletin boards, and conferencing systems will need to be identified and installed on the network so that students can communicate with each other and with the faculty.

Manuals and software will need to be prepared so that users of the system who will be isolated from any direct help can learn enough to function and use the basic features of the computer and the network system without reference to other users or to personnel at the University of Waterloo.

Although manuals will be prepared for the students it will be necessary to have a telephone hotline service available during the day for students who have difficulty communicating with the network system by computer. As more experience with the system is acquired and as the manuals improve, the need for such a hotline will likely diminish. There will always need to be a telephone number that students can call in case of operational difficulties or equipment malfunction, although this can probably be restricted to normal working hours after a suitable time period.

There will also be a need for a staff member to monitor the electronic mail and conferencing systems. Since there is no experience with how students will interact with the faculty and their peers, it will be necessary to oversee the use of the electronic communication systems to determine the usage patterns.

CONCLUSIONS

Although there has been much hope held out for the transformation of distance education by technology, so far most distance education is "low-tech" (print, audio cassettes). Computers have been used, but mostly in experimental settings since cost, logistics and lack of standards in software and hardware created problems for larger-scale programs. Recently costs of appropriate microcomputers have dropped substantially and reasonable standards have started to emerge, thus making this new round of experiments feasible.

The innovation described here is one of the first by a large successful distance education program in a large established university. It will be interesting to look back at the next ICDE conference in 1991 to see what impact this trial has had on the practice of distance education at the University of Waterloo.

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The Jevnaker project: two experiments with live interactive television

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INTRODUCTION

Since 1984 the Norwegian Telecom's Research Department has conducted a research project on cable technology at Jevnaker, a small town just north of Oslo. A cable network was built, partly coaxial and partly fiberoptic. The primary aim was to supply the community with new broadcasting services, but the Norwegian Telecom was equally interested in testing out and experimenting with new services.

Distance education was chosen as one field for experimentation. Co-operation with the Norwegian Association for Distance Education (NADE) was established in 1985. A project team was formed, with four members from NADE and four members from the local community, Jevnaker. Tove Kristiansen from the Norwegian Telecom's Research Department was project manager. The team's mandate was to establish distance education programs that would be useful both for the community and for the experimenters.

Two programs have been carried out. Both were televised teaching based on a one-way video and a two-day audio connection.

The first, "the glass-blower program", was carried out in co-operation between the local school authorities, a glass works in Jevnaker and the Norwegian Telecom.

The second, "the French program", was carried out in co-operation between the NKS Institute of Distance Education, member of NADE, and the Norwegian Telecom.

THE GLASS-BLOWER PROGRAM

The largest and oldest Norwegian glassworks is situated in Jevnaker. In autumn 1985 the local school authorities and Hadeland glassworks agreed to start a training program for young people who wanted to become glass-blowers. The trainees would receive their technical training at the glassworks and their general training in subjects like Norwegian and English from an ordinary secondary school some 30 kilometres away.

This was an arrangement which easily lent itself to an experiment with distance learning. For obvious reason the trainees were based at the glassworks at Jevnaker. So for English and Norwegian lessons they would either have to travel to the school or the teacher would have to travel to the glassworks. The final alternative was to organise a distance learning situation, using various kinds of telecommunications.

In autumn 1986 we were ready to start the experiment with teaching and learning at a distance.

The experiment lasted for about six months and involved two teachers and ten students (in their early twenties). The class met with their teachers in the classroom every second week. One week they were taught Norwegian at a distance, the other week English. Thus, teachers and students knew each other well, and they could easily compare the two different ways of teaching.

The technical set-up was simple. A camera was placed in an ordinary room at the secondary school and a monitor in the classroom at the glassworks. In that way the students could see their teacher, but the teacher could not see the students. Loudspeaking telephone equipment was installed at both ends, so that they could hear each other all the time. In addition they had the possibility of written communication by telefax.

At the teacher's end no extra effort was made to

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create a "studio" except for a pair of extra curtains and some noise-breaking material in the ceiling. The camera was focused on the teacher, who was sitting in front of the blackboard. There was no one there to help him or her run the camera.

We chose this set-up in order to see how simply it could be done and still achieve an acceptable learning situation. No doubt it was sufficient in that it established a dialogue, which in itself is an important experience. To many learning institutions with small resources and with students scattered throughout a big area the main thing is to get in touch. This can be done with simple and rather cheap equipment. Learning institutions should be aware though, that with a solution like this, they have limited possibilities for communication.

We have raised the question how important it was to use television when the picture transmitted only showed the teacher and the blackboard. Watching the teacher's face on the screen will itself be meaningful in situations where the students are not acquainted with their teacher. It will then be important to them just to get an image of him or her. In our case, however, the students knew their teachers pretty well beforehand. Watching their faces on a screen was in that situation not enough. The students demanded something more from the picture. Some of them even said that they found the picture disturbing and that they might just as well do without it.

To test this case we cut out the picture for a period of four weeks, in the middle of the course, and most of the students did not miss it. Actually, some of them found it easier to concentrate when there was only the sound connection. Where they did miss it, though, was when they had discussions. It was then important to them to see if the teacher had got their point and whether he or she had any immediate reaction.

What about the teachers? Did it make any difference to them, not being able to see the students anyhow? They found it harder to concentrate when the camera was running. As one of them said, knowing that the students watched him, made him a bit more upright in the chair.

Thus, the picture was important to a certain extent. To profit from it pedagogically, though, the conclusion was that there should be two cameras, one pointed at the teacher and one at the blackboard. With one camera only, we didn't get a close enough shot of the teacher or the blackboard.

During the experimental period the questions about the function of the picture were highlighted. When is the picture important? How can we profit from it in distance education? What impact does it have on the teaching and learning? These are the questions that we would like to try and find answers to in further experiments.

As for the sound connection, it was difficult to get used to the loudspeaking equipment. This allows only one end to speak at a time. If both ends speak at the same time, the one who speaks the louder, will get through. It will also take the signal a little time to shift direction. Thus, it is necessary to make small pauses. Otherwise you will get the feeling of being cut off at the beginning, or at the end of a sentence. In other words, this equipment makes it necessary for the participants to discipline their talking more than they are used to. The pupils were especially frustrated about this.

Another problem was that the picture and the sound were not fully syncronised. This was because the sound was relayed by an ordinary telephone connection, whereas the picture was coded and transferred at a slower speed (2Mbit/s, which is much slower than an ordinary television signal). Thus, the sound came through slightly ahead of the video signal. The students found this disturbing in the beginning. It seemed that it was something they got used to after a while.

We should bear in mind, however, that this may be one of the small details in a complex situation that in the long run has a tiring effect on the participants. As many of them said, as long as the technology works, you don't think of it as being something special. But it is quite clear that as soon as it doesn't work in one way or the other, you get an intolerable situation.

The technology is important, but the interesting thing is to see what it does to the organising of education and what impact it has on communication patterns and social life. For instance, there was a tendency for the more outspoken students to become more dominant in the class when the teacher was on the screen and not present. The quieter students found it harder to get in contact with the teacher, and did not ask so many questions as they would have done otherwise. Not all of them found this problematic though, for as they said, "all the questions I would like to ask, are being asked by others". It is a reminder, however, to all teachers of distance education that they should be very conscious about addressing every single student directly.

Both the teachers and the students acted in a more disciplined way when they were meeting on the screen. As a result of this, they managed to do the same amount of work by distance education, even though these lessons were always shorter than the lessons in the classroom.

The more disciplined lessons also resulted in less small talk. This may or may not be a good thing. Several of the participants said afterwards: "I think the small talk that we usually have is important". In other words, they felt that one essential and valuable side of the social life that is part of all classroom education was lost.

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As the students met with their teacher every second week, the experiment with distance education was actually constructed to meet artificial needs. This is important, because the students thus experienced distance education as a deprivation instead of a supplement. Nevertheless, they could easily see that this kind of education would be of great value in places where they did not have local tutors.

Also the teachers had ordinary classroom education as their starting point. What we did in this experiment was to try to transfer their well-known way of teaching to the mediated form. In other words, we tried to make distance education as similar to classroom education possible. This does not fulfil the potential of the technology.

We believe that the use of technology in distance education represents a challenge to all known pedagogic thinking. The technology has potential as yet unknown to most educators, differing from medium to medium. This takes time to explore. It should be experimented with in new and untraditional ways of teaching.

THE FRENCH PROGRAM

The experimental group for the French program was an already established group of ten adult students of French. They were in their second semester of French for beginners. They were correspondence students at the NKS Institute of Distance Education and they also received local tutor support at weekly night-classes — the so-called combined study method.

For a period of seven weeks in spring 1986 they also received weekly televised French lessons from their correspondence tutor, in their own homes, with the possibility of using the phone for two-way communication. The set-up was similar to the previous experiment in that it was using one-way video and two-way audio. But there were important differences. For the French program the video signal was transmitted via satellite from the Norwegian Telecom's studio in Oslo to Jevnaker. Secondly, there was no open sound connection. The students had to phone in, or the tutor had to phone the students for two-way communication.

NKS had two important reasons for wanting to set up this experiment:

(1) we wanted to try out real-time communication via television
(2) we wanted to test a certain program format.

The experiment was part of our development program for new support services for our distance learners. Our objectives were to:

- intensify the communication between the learners and the correspondence tutor, with an emphasis on making it more personal
- help the students in the self-study process, both by presenting the learning materials in new ways, and by pacing them through the course.

What we did *not* do, was to present video programs on television. The students met their tutor "on screen", she became a real person, and not only a "marker" of their written assignments.

In addition, the students also saw a lot of still pictures, illustrating oral exercises for extra practice.

The telephone served two functions. First, it was used for individual tutoring and support. The tutor called all the students at least once during transmission. We had a loudspeaking telephone in the studio, so all the students could listen to the conversation. Once the students had gathered in a group they were given a group task to be discussed on the telephone during transmission.

We had encouraged the students to telephone us in the studio or afterwards, but only a few actually did. But we got some feedback from two students after the first transmission, and one student called once to ask for a repeat of an exercise which had gone too fast. There were a few other calls as well.

The telephone also proved useful once when there was no sound connection and once when the satellite signals did not come through. The students phoned in and told us they could not hear and could not see.

The experiment was surprisingly successful. The ten students had made every effort to participate when the tutor was "on air". Most of them had watched all our programs and had found them very helpful. The students had cleared their families out of their sitting-rooms claiming this was "their hour" and they wanted to be alone so they could speak up aloud when they were asked to. They enjoyed their tutor, and they were inspired to pick up their books and audio-cassettes and do some studying. In fact, they were seriously hoping that the experiment could be continued.

These student responses were revealed when we interviewed each one of them in summer 1986, after the experiment. We also asked them whether they might as well have received a video-cassette, but most of them very clearly expressed the advantage of a scheduled transmission time and the possibility of live interaction. The students did not use the telephone much but some, at least, felt safe knowing the opportunity was there. Some were very pleased to be called up by the tutor and they contributed well. Others felt too scared to talk much.

Some said that knowing that all the other students were watching at the same time gave them a feeling of togetherness — even though they watched the programs separately in their own homes.

The project was small in scope, but the experiences drawn from it undoubtedly threw light on significant aspects of live, televised teaching. Many choices had to be made concerning the program format, technological solutions and the arrangements for two-way communication. Lots of things went wrong, both technically and otherwise, but we strongly felt that the project had been worth while. We had taken the opportunity to use television as a teaching medium based on our own premises and needs, independent of the monopoly of national broadcasting. This in itself was a large step.

The NADE media and technology project: New ways of supporting distance learners in Norway

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INTRODUCTION

During the last 20 years we have seen a revolution in the development of media and communication technology applicable for distance learning. Observing these developments we find that:

1. A number of media advocated by hardware and software dealers as well as by enthusiastic educators, have not lived up to promises and expectations.
2. Media and communication technologies which have proved to be efficient, at least for some educational purposes, have often not been able to justify their place in the educational system because of relative costs. Consequently, media combinations that are reasonably successfull in a research situation have been abandoned when research or support funds have been withdrawn.
3. It has been shown that well-known "traditional" media such as the audio-cassette (Bates, 1983) and even print (Daniel and Stroud, 1981) have been and can be developed to compete favorably with newer media developments in a majority of learning situations.
4. The application of new media for learning situations demands a development of well-founded didactics based on learning theory and empirical studies. There has obviously not been time for such development parallelling the rapid introduction of new technological solutions during the past three decades.
5. The grass-root people responsible for planning, administrating and carrying out training in distance education have not had sufficient opportunity to keep up with the innovations. Consequently, a decision to choose a certain medium or technology for a given learning system is in many instances taken without sufficient information and evaluation.

THE SITUATION AMONG NORWEGIAN DISTANCE TEACHING INSTITUTES

In 1984–85 when the project was started, the situation in Norway could be described as follows:

The distance teaching institutes in Norway had different experiences concerning the use of new media. The majority of the smaller schools had mainly been using print-based material only. Some of the institutes had experience from co-operation with the State Broadcasting Company on multimedia courses involving the use of radio and television as well as video and audio-tapes.

A number of schools had experience in combining audio-tapes with print, and not only for language courses. Some experiments had been carried out on the systematic use of telephone for tutoring and counselling (Rekkedal, 1985). During the explosion of interest in computer learning programmes in the beginning of the 80s some schools had introduced the use of computer in some courses. Most Norwegian distance teaching institutes had extensive experience with combining distance teaching with local face-to-face teaching.

Parallelling the general international developments in media and communications technology, one change of specific interest was the political decision to reduce the monopoly situation held by the State Broadcasting Company, allowing a large number of experiments with local radio broadcasting and local television cable networks.

THE TOTAL PROJECT

GOALS

The NADE Media and Technology Project was established on the mutual agreement that it would be in the member schools' interest to co-operate in developing knowledge, insight and experience in the use of new media.

This common understanding of the need to co-operate was, in our opinion, a significant condition for the success of the project. Such co-operation was all the more challenging since the schools, to a large extent, are competitors. As members of NADE, they were moving into a new field of co-operation.

The following aims of the project were agreed upon:

1. The most important goal was a broad development of both staff and organisations in the use of new media.

   Rather than involving some educational theorists in a more scientific-like research, we aimed to involve a large number of academic and technical staff in all the participating institutions, so as to stimulate activity and co-operation on many levels. Inter-institutional exchange of experiences was to be part of the project design.
2. We would rather try out any "little" media with high accessibility that are fairly low-cost than concentrating on "big" media, which could easily be seen as more exciting. We wanted to develop the use of media that could have practical importance for the majority of the schools in the immediate future, such as the telephone and the audio-cassette.
3. Some attention should, nevertheless, be given to the new media, with regards to a more distant future, e.g. satellite transmission, audio and video conferencing, cable networks etc. In this connection the project established connections with the Norwegian Telecom's Research department which had already set up a project in the small town of Jevnaker, just north of Oslo, testing out applications of an advanced cable network. The Research department was happy to enlarge their project by including distance education as a field for experiments.

Thus, the following sub-projects were established:

1. International trends and experiences: collection and distribution of information about international development of new media in distance education.
2. The telephone project: staff training, experiments and development programmes.
3. The audio-tape project: staff training, experiments and development programmes.
4. The Jevnaker project: experiments with local cable network applications.
5. The local radio and television project.

The first project about international developments was mainly carried out as part of the planning of the total project and the information was used as necessary input for defining and shaping the other four sub-projects. But it is also an on-going project.

The starting point for the project was a conference in December 1984 organised by NADE and the steering committee, and attended by all the participating schools and institutes. Four sub-project groups were set up, with members from seven different institutes. Their first mandate was to work out a plan for the projects they wanted to engage in, giving attention to pedagogical, administrative and economic aspects of each project. The four groups presented their plans at a second conference in April 1985.

At this point some schools had realised that they did not have the capacity to participate fully in any project, and they withdrew from active involvement. However, it is of prime importance for the project that information and experience should be spread and shared by all members of NADE, whether they take active part in the project or not.

RESULTS, SUCCESSES AND FAILURES

Two and a half years later, in October 1987, some projects are finished, some are still active and in progress, some were aborted and some were never realised. We have gained experience in the use of the telephone and the audio-cassette, and we have had some interesting results with the use of satellite transmission for interactive television. Only tentative steps have been taken to reach out to the local radio and television networks, but one project is well on its way.

We have certainly learned something about the balancing of co-operation and competition, and we have reached a deeper understanding of the need to co-operate.

THREE EXAMPLES OF NADE SUB-PROJECTS

The following describes aims, designs and some preliminary results from three of the sub-projects involved in the NADE co-operative project. These are the NKS tutor/student audio-cassette project, the

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NKS telephone project and the NKI telephone project.

THE NKS TELEPHONE AND TUTOR/STUDENT AUDIO-CASSETTE PROJECT

Besides being part of the NADE project, the two NKS projects are also part of a large NKS project: developing student support services at NKS.

NKS offers a range of courses, on many levels, from secondary school courses for adults up to university-level degree programmes. It has been important to organise projects that cover many courses and levels, so as to know whether strengthened tutor support may be more crucial for some course areas than others.

By August 1988 the telephone and the audio-cassette projects will be over and the results analysed. Some tendencies already seem clear now in October 1987. They indicate that results vary with level and subject area, and that no clear general picture emerges.

Judging from interviews and questionnaires, students seem pleased as do the tutors, but only after some routines were altered and simplified. Cost is a problem area. If completion rates do not increase, we may have to ask students to pay for extra tutor support, and we know very little about their willingness to do so.

Our approach to research methods in pragmatic rather than scientific. This means that the project design needs to be well enough defined for us to be reasonably certain that the results can be trusted. The primary goal of the project is to get a basis for future decisions about student support services. The audio-cassette project has an additional aim and is therefore more scientific in its approach. It constitutes the experimental part of a thesis for an M.A. in Education at the University of Oslo.

Many aspects have to be tested and studied: first of all the students, but almost equally important are the tutors, the administrative procedures and costs.

The students are divided in experiment groups and control groups. We measure completion rates, grade distribution and attitude changes.

For the tutors, making use of new media means a change in their tutor role towards wider responsibility and less flexibility. A clear understanding of the demands made on the tutors is necessary for further strategies and tutor acceptability is given much attention by the project managers.

An important question has been raised. Given that we expand the tutor role and functions, do we then have the tutors that we need?

NKS is a large institution, with around 100,000 new course enrollments each year. Needless to say, smooth routines are absolutely essential. A new computer system for the administration of students, tutor and courses is being developed, taking into account a higher degree of flexibility of tutor services. A fruitful interchange of experiences is taking place: the pilot projects define new tasks for the administrative system, and the system sets limits for the project.

THE TELEPHONE PROJECT

The telephone project is in its third year and third phase in 1987–88. The project design has been modified each year since the project started in 1985, but the basic design is the same. Students who enrol for a specific course at the NKS are contacted on the telephone by their correspondence tutor. The contact is kept up for as long as the student is actively working on the course if the student wants to keep it up. The emphasis is on personal motivation, practical information and study guidance and of course on giving the student the chance to ask questions about any problem he or she may have.

The results after one year showed a marked difference in the completion rates in the experiment group and the two other groups. The test group students were far ahead (Blom, 1986) but then only the students who positively accepted telephone support became part of the experiment groups.

The second year's project did not ask the students whether they wanted telephone support, but they were divided randomly into an experiment group and a control group. Preliminary results show that the experiment group made slower progress at the beginning than the control group, but this has evened out, and the test group is slightly ahead after one year. It is too early to say whether the difference is significant.

The third year's project was started just before the writing of this paper. One important change has taken place in the design. This year the tutor only makes an initial call to the student, and afterwards it is up to the student to contact the tutor. Each tutor has a fixed time period for telephone contact, two hours, once a week.

We are eager to see whether the students will find this year's arrangement useful. Will the initial call give them an easier start? Will they call their tutors even if they have the chance to do so only once a week?

These are some of the questions we hope to answer in August 1988.

THE TUTOR/STUDENT AUDIO-CASSETTE PROJECT

The NKS Tutor's Handbook divides a correspondence tutor's work into four functions. The written comments on the student's assignment should include:

1. Corrections
2. Counselling
3. Encouragement, motivation
4. Evaluation

The audio-cassette experiment concentrates on the two functions "counselling" and "motivation" of the student. The tutor's comments are thus both oral, on cassette, and written, on the assignment paper.

One ten-minute cassette is sent back and forth between the student and the tutor, along with the written assignment. The cassette has a tutor's side and a student's side. Each new comment recorded by either of them erases their previous comment. The point is that this is more of an informal dialogue than actual teaching. Any comment that the student might need to refer back to when revising the course, should be a written comment.

The project involves nine tutors, teaching nine different courses, 245 students in the experiment group; and 125 students in the control group. The courses vary in level, subject area and length. The tutors were carefully selected from among tutors who proclaimed a serious interest in such an experiment. The students were selected randomly.

In June 1987 the tutors received a questionnaire asking them to describe the joys and frustrations of being an audio-cassette tutor. They all felt they communicated better with the students, and particularly enjoyed it when the students talked back to them. Their main problems seemed to be technical rather than pedagogical. They emphasised their need for oral skills and preferably some ordinary teaching experience.

The students receive a questionnaire when they have completed the course. The students have not all completed their courses yet. But in September 1987 the answers on the questionnaires show that the experiment students are generally more pleased with their relationship with their tutors and the control students, and 90 per cent of them would like to use the student/tutor tape if they were to enrol for distance education courses in the future.

An analysis of the final marks given to the students show that the students who have been supported by audio-cassettes have obtained slightly better results than the control group.

By September 1987, 46.5 per cent of the students in the experiment group and 47 per cent of the students in the control group had competed their course. The non-starters are not represented in these figures because all the students involved came into the project after having completed their first assignment.

These figures seem to indicate that tutoring by audio-cassette has no influence on the completion rate. Looking into the figures for each course, however, we discover some interesting facts. One course deviates from the rest; in the experiment group 57 per cent completed the course, and in the control group as much as 89 per cent completed. Obviously, this surprising result influences the total picture.

For all the other courses, the completion rate for the experiment group is either higher or at the same level as the control group. There are great variations, but the average is an 18 per cent higher completion rate for the experiment group.

We may assume that extra tutor support, given on an audio-cassette, influences the completion rate differently according to course. We may also assume that depending on the course chosen, an NKS student may stand a better chance of completing the course with the extra tutor support on cassette.

THE NKI TELEPHONE PROJECT

The NKI Distance Teaching Institute offers programmes primarily within the technical/vocational and management fields. The Institute recruits approximately 12,000 students a year (approximately 50,000 enrollments). For more than 15 years there has been a tradition of carrying out systematic research within distance education. The project generally has been based on established principles of research design and statistics. A number of projects have been designed as experiments involving experimental and control groups.

As part of a previous NADE project NKI carried out an extensive experiment on the concept of tutor and counsellor roles in distance education (Rekkedal, 1985). In this experiment tutor initiated telephone instruction and counselling constituted one of the interrelated variables in the integrated tutoring and counselling system. Increased completion rates were reported from the experiment, as well as very positive student opinions towards telephone tutoring.

In the present NADE co-operative project NKI wished to continue experiments with telephone tutoring, now with three broad aims: to evaluate practical and financial effects involved in establishing telephone tutoring as a normal part of the part-time tutor's work; to see whether the systematic use of telephone would stimulate study progress and increase completion rates in the correspondence learning system; and to get information about the attitudes of the students towards telephone instruction.

An experiment was designed involving three groups of students enrolled for a 17 unit programme on transport economy and technology. The experimental group received systematic tutor initiated telephone instruction (75 students), one control group was taught by the same teachers by traditional correspondence methods (55 students), while the second control group was taught by another group of tutors (56 students).

A considerable number of students randomly selected to the experimental group could not be reached by telephone, so the statistical differences on study progress variables were less than can be expected from a treatment variable having an influence on all students involved in an experiment. Thus differences in starting and completion rates were found in favour of the telephone group, but these differences were generally not statistically significant. The students expressed extremely positive attitudes towards telephone tutoring. A majority of the students in all three groups (i.e. regardless experience with telephone tutoring) reported that they would prefer to use the telephone to communicate with their tutor when encountering difficulties in their studies, and most students answer that they would like to have telephone tutoring included in the system of instruction, even if they have to pay more for the course.

The tutors reported that they experienced that the telephone tutoring made their work as distance tutors more inspiring. The extra work involved in using the telephone and being called up by the students was not seen as a heavy task. It seemed that the inclusion of telephone tutoring would not add major costs to the system.

At the moment of writing the results from the experiment are under evaluation, and NKI is now considering different ways and the financial consequences of organising telephone tutoring in different courses and programmes.

SUMMING UP

The NADE project will, in its final phase, distribute reports and set up workshops giving the participants ample opportunity to learn from each other's experiences.

A preliminary summing up reinforces what we knew from the beginning, that inter-institutional co-operation on research and development has been a challenging experience. We have seen that competing institutions are able to co-operate to all parties' benefit. It is also true that in some institutes there is an even greater willingness to co-operate now than when we started.

Personal relationships that have developed through the project will probably stimulate further exchange of ides, knowledge and experience.

An important goal was that staff development and media development should go "hand-in-hand". We still believe this to be the right approach, but it means we must accept that *things take time.* Altogether five institutes have been actively involved in the project, and we are eagerly waiting for their reports, due to be published in the course of 1988. We started it by sharing ideas and plans and we will terminate the project by sharing results and experiences.

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Helping behaviors of learners in a telephone-based instruction group

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The aim of this research was to identify the helping behaviors of distance learners in a telelecturing setting.

A review of the literature produced a list of helping behaviors in distance education and telelecturing. The helping behaviors were classified onto one of the two broad areas (social-emotional and task) used in the Bales Table, and were further classified into one of the three categories of behavior proper to each area. This classification was verified by three judges.

By classification of data existing in the literature, we were able to formulate the hypothesis that of all the helping behaviors, task-related behaviors, especially those related to communication, were of the greatest importance for the learners as members of a telephonebased instruction group.

The questionnaire had two parts: the first contained questions designed to identify the personal characteristics of the respondents; the second dealt with helping behaviors and their importance in a telelecturing setting. The questionnaire was sent to all 304 people who took courses by telelecture at the University of Moncton (New Brunswick, Canada) in 1985 and 1986. 182 people or 59.8% of the group answered the questionnaire.

A total of 85 different helping behaviors were noted by the respondents; 26 of these appear more important than the others. Three behaviors are exceptionally important: listening to others when they are speaking, discussing ideas with others and paying attention to others.

The results show that task-related helping behaviors are more important for the respondents than social-emotional behaviors and that the most important of all behavior categories is that of communication in task-related behaviors.

The main objective of this research was to answer the following question: What are the helping behaviors of learners as members of a telephone-based instruction group? This objective was attained by identifying helping behaviors cited by learners and which of these behaviors were perceived as the most important and by classifying behaviors.

A review of the literature enabled us to draw up a list of behaviors helpful for learners in distance education and telelecture settings. Behaviors in the list were classified according to a reference grid based on the Bales table for classifying behaviors of members of a group (1951), which comprises two areas (social-emotional and task), each containing three categories. On the basis of this classification, we developed a working hypothesis that distance learners would more often identify task-related behaviors, particularly those concerned with communication, than they would identify social-emotional behaviors.

Three judges verified the grid for classifying the behaviors of learners in distance education or telelecturing settings.

A two-part questionnaire was prepared. The first part was designed to provide information on respondents' personal characteristics; second part asked respondents to identify behaviors perceived as helpful to learners in a telephone-based instruction group and to rank-order these behaviors. The questionnaire was sent to the 304 persons who took courses by telelecture at the University of Moncton in 1985 and 1986.

Completed questionnaires were received from 182 persons (59.9% of the target population). The majority (71.5%) were women under 36 years old who had 13 years' schooling or equivalent even before registering for the telelecture courses. The majority were part-time students (64%) with paying jobs (59.3%). Reasons for registering for the courses were primarily of a cognitive nature (58.7%) and 77.5% of the respondents preferred group studies.

The respondents also answered open questions (research variables) with 853 responses, representing 86 different behaviors. Responses and behaviors were classified by the author, and the classification was submitted to three judges for verification. The responses and behaviors were them compiled and ordered according to number and importance.

Table I: Order of categories, behaviors and responses, by area

Areas and Categories	Number of Behaviors	Total and Percentage	Number of Responses	Total and Percentage
Task-related		47 (55%)		520 (61%)
Communication	23		337	
Control	16		139	
Evaluation	8		44	
Social-emotional:		38 (45%)		333 (39%)
Reintegration	17		144	
Tension reduction	11		126	
Decision	10		63	
TOTAL		85 (100%)		853 (100%)

An analysis of the results reveals that, whether number or importance is considered, the order of behaviors is almost identical.

Table II: Importance of categories and behaviors, by area

Areas and Categories	Number of Behaviors	Total and Percentage	Importance	Total	% of 2193
Task-related:		47 (59%)		1427	65.1%
Communication	23		931		
Control	16		390		
Evaluation	8		106		
Social-emotional:		33 (41%)		766	34.9%
Reintegration	13		324		
Tension reduction	10		271		
Decision	10		171		
TOTAL		80		2193	100%

Using the criterion of the importance average which was calculated by dividing the total number of points of importance by the number of important behaviors identified by the respondents, 26 helping behaviors were identified as being the most important. This list of 26 behaviors fell naturally into three divisions, or degrees of importance. The highest degree (125 points or more) comprised three behaviors termed exceptionally important, namely:

- listening to others when they speak
- discussing ideas with others
- paying attention to others

The second degree of importance (63 to 100 points) consisted of seven behaviors termed very important, namely:

- participating seriously and actively in classes
- giving examples to clarify the meaning of ideas
- asking questions about the subject
- engaging in specific individual activities
- expressing one's opinion
- creating and maintaining a good work climate
- paying attention to what is said

The third degree of importance (28 to 45 points) comprised the following 10 behaviors, which were termed important:

- helping each other
- accepting feedback from others
- speaking so as to be understood
- discussing problems brought up
- participating in social life through participation in the group
- chatting with others
- giving feedback
- recognizing one's strengths and weaknesses
- helping to channel discussion
- offering information useful to the discussion
- commenting on a statement that has been made
- arriving on time for the class
- showing team spirit
- helping someone else
- adapting to the way in which the course in organized

For the respondents, task-related helping behaviors were the more important of the two types, both in

Category	Area	Weight number out of 2193	Percentage
Communication	task	931	42.4
Control	task	390	17.8
Reintegration	social-emotional	324	14.8
Tension reduction	social-emotional	271	12.4
Decision	social-emotional	171	7.8
Evaluation	task	106	4.8

terms of number of responses elicited (61%) and in terms of the weight accorded (65.1%). The most important behavior category, in terms both of number of responses (39.5%) and weight accorded (42.4%) was that of communication in the task area.

Analysis made it possible to classify the various categories of behavior in order of importance.

32 new behaviors (i.e. behaviors not included in the classification grid) were identified by the respondents and placed in one of the following categories: communication (4), control (7), reintegration (5), tension reduction (6), decision (6) and evaluation (4).

One methodological problem arose from the fact that the classification grid was based on the Bales table. During the classification of results, it became evident that it would be difficult to classify certain behaviors proper to a telelecturing setting without accepting a broader interpretation of certain categories that had been designed for observing face-to-face groups. For example, doing the appropriate textbook readings before a class, a task-related behavior, is above all an individual behavior, engaged in outside class-time. However, the judges considered it a useful category to retain, because it contributed important information on the helping behaviors of the learners in question, and because this behavior did in fact promote active participation in the group and task-related group work.

Another problem was presented by the classification of the responses. It was sometimes difficult to establish a hard-and-fast distinction between the category of reintegration and that of tension reduction as well as between the control and decision categories. Several responses in these categories could be considered interchangeable. A slight difference in the perception of a response, or the use of a qualifier after an action verb, often influenced the decision to classify the response in one category rather than another. The seriousness of this problem was mitigated by the judges agreeing to verify the classification of behaviors and responses and attempting to reach a consensus on contentious points. The judges were able to make various comments which proved useful in the analysis and interpretation of the results.

A third problem was two descriptive variables. For the variable "Reasons for registering for courses", too large a number of categories was used which made it difficult to pinpoint respondents' principal reasons. For the variable "Respondents' attitude toward cooperation and competition", the responses proposed allowed little room for expressing attitudes favorable to competition.

The results of this research provide, for the first time, a detailed list of helping behaviors specifically related to learners in a telelecturing setting. Watters' research had already made the tasks and functions of a telephone-based instruction group known. The present research led to the identification of 85 behaviors which help the learner in this type of group carry out these tasks and functions.

Watters (1985), for example, had identified *Asking* as an important task for this group of learners. The exact nature of this task becomes clearer when the helping behaviors related to it — asking others questions, asking for the floor, asking others to explain difficult concepts and asking for *feedback* — are specified.

The significance of these results must of course be measured against the relatively small number of respondents (182, or 59.9%), of the 304 persons taking telelecture courses at the University.

The questionnaire had a number of open questions to reveal the group's perceptions about helping behaviors. These questions allowed respondents themselves to help define ideal ways of acting for members of a telephone-based instruction group. The number and quality of the responses of this group of learners enriched the classification grid by providing it with 32 new categories of behavior, an increase of almost 38%.

This research could serve as a point of departure for a future study which would compare the helping behaviors identified by respondents in the present study with helping behaviors identified by distance learners involved in instructional settings in which the participants (i.e. professors, tutors and learners) transmit nonverbal messages. Telelecturing forces those involved to take the limitations of the telephone into consideration and adjust their behaviors accordingly; communication must be based on verbal language, which is the principal medium for social-emotional and task-related interactions.

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Our study could also enable researchers to identify other factors in instruction by telelecture, for example teaching methods adopted by the professor and the type of task required of the learners (problem-solving, case studies, discussion, etc.).

In a telelecturing setting the learner becomes in effect the principal agent in the educational process. Also as members of a telephone-based instruction group, learners must consider themselves, others, and the group as a whole if they are to make their learning situation viable.

In the face of the many limitations imposed on distance education — cost, flexibility, accessibility, efficiency — telelecturing appears to be a promising option, and administrators and adult students are naturally interested in it. Recent technological developments in telephone communications, and the increasing interest in small learning groups, make telelecturing an interesting area to explore for researchers in adult education, distance education and genagogy*.

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* The word genagogy, *from the Greek* genos, *for "race", "family", "kind" in the sense of "group" is patterned after the word "pedagogy". It designates the science and art of rendering group activity effective. A program in genagogy was established at the Universite du Quebec a Trois-Rivieres in 1969 by Reynald Rivard, in collaboration with Nicole Bourget. As a study, genagogy is concerned with the communication phenomena which influence the effectiveness of individuals within a group, and of groups interacting with other groups. The professional goal of the practitioner in genagogy is to improve the functioning of the individual through the group as well as relations between groups.*

Ways to develop the unique strengths of distance education for global progress

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INTRODUCTION

GLOBAL TRANSFORMATIVE OPPORTUNITY

Sensible priorities are obtained by looking at the context of our work. If we start by looking at the whole living mantle of this little planet, what Lovelock calls GAIA, then it is clear that its viability is now in doubt. (Macy, 1983) All other educational aims are necessarily subordinate to the continuation of GAIA's desire and ability to survive. Surely this is true even if you take the individualist position that each of us has a right to happiness now, in our own lives, because we are evolved biologically in such a way that human beings cannot be really happy at any given "now" without some intimations of a future. However, if our survival protection machinery becomes so complexly hierarchical that there is no freedom for each of us to create our own individual contributions to life, then the desire to survive collapses, and the huge security system is meaningless and futile.

Some sort of educational transformation should enable people to act more creatively, and more cooperatively as world-makers, as the consciousness of Gaia; or to put it in Buckminster Fuller's terminology: as the navigators and crew of "spaceship earth".

UNIQUENESS

UNIQUE STRENGTHS OF DISTANCE EDUCATION:

1) Context-distancing

Distance education frequently seems to the student as though it is a connection to another world, in some sense an higher and better world. The film of Willy Russell's play "Educating Rita" conveyed this very well. Also my own experience taking the National Schools Radio Electronics correspondence course when I was eleven years old, is fresh in my memory as an experience of wonderful connexion to a "brave new world" at 4000 South Figueroa st. Los Angeles California (Glamourfornia!) The situation in which I actually lived and suddenly contracted: through the deaths of my Great Aunt and Grandmother, who were like additional mothers to me, and due to our forced move which cut me off from my erstwhile chums. Under these circumstances the regular fortnightly arrival in the morning mail of packets of nicely printed electronics lessons, and occasionally of real parts to build oscillators, amplifiers etc. was an exciting other-world connection utterly divorced from the bullys at school and the tiresome tasks at home. That correspondence course was not just another situational constraint, like the cranky old landlord downstairs, it was an escape and a catalyst enabling me to mobilize part of myself which otherwise would have been held in suspension or might perhaps even have atrophied.

It seems that in fact it is possible by undertaking a distance-education course to distance oneself from both the home & work worlds, and also from the school world. There is a distancing, due to the postal or broadcast media, from the world of school or university life, as well as a distancing from the daily life of family and the routines of work. From both sides, one can say to oneself: "I am in this world but not of it!". This new space which "really isn't anywhere; it's somewhere else instead", can give extra freedom of action to one's deepest self to develop and mobilize new personae. The SITUATIONS of everyday life, and of conventional school life are often so demanding, by continually insisting that busy-work be done, as to leave no room for deeper growth tasks. Distance education because of its looser articulation, because of the distances in time and space and personal relations involved, can provide such badly needed growing space. Open University course-work provides a respectable reason for even a mother to absent herself from some family duties, as well as providing a variety of new information and new role models to try out in her formative imagination.

2) Mentor-intimacy

One of the curious things about the National Schools electronics correspondence course was the way in which the lessons tests and workbooks were interspersed with wise and humorous aphorisms written or quoted by the president, one J. K. Rosenkranz. They continually encouraged you to think of the learning enterprise as one of building confidence and character not just technical skills. The flavour was closer to Horatio Alger than to Maimonides but nonetheless it had an impact. Again the university of Chicago correspondence course which I worked through when I was living on an Arctic island (Alert N.W.T.) in the fifties provided some friendly encouraging support through the letters sent back to me with my corrected assignments by the tutor. Many distance education organisations attempt to provide similar kinds of encouragement through TV personalities, published material, postal counselling, or local tutoring. (Sewart, 1983)

Perhaps such support is only the beginning of what is really possible in distance education. Here, I am thinking of those long personal correspondences which are essentially an exchange of programmatic and critical ideas, as well as being love letters, which we know from history and if we are fortunate, from personal experience. The letters exchanged between: Heloise and Abelard, Elizabeth Barrett and Robert Browning, and those of numerous less celebrated friends and lovers have formed an essential part of the mutual education of many people. They have provided space to privately cultivate personae transcending the mere everyday addiction to prevalent meme-roles. They can and often do involve 'transformative'-emancipative & visionary, learning at a distance from others. They certainly involve distancing the learner from everyday situational pressures. What they obviously don't involve is any collectively organized institutionally supported programme. On that basis they are technically not examples of what Keegan (1980) defines to be distance education, but they do have something to teach us about the possibility for deeper growth through loving mentorship at a distance. In my own life I have participated in four protracted correspondences with distant intimates which were largely dialectical exchanges of ideas and trials of new ways of being (rather than being the conventional newsy letter exchanges, such as the term correspondence tends to evoke). These were another kind of distance education for me.

Paul Goodman was one of the few people with the courage to point out directly the sexual and erotic aspect of education. (Goodman, 1962, p. 103) A dialectical educational marriage of minds, is often (and perhaps should more often be) accompanied by at least the fantasy of total conjugation. In the situation of an ordinary school intellectually erotic connections between learners and teachers tend to explode and ruin one or both parties. But in distance education learning letters can be at least implicitly love letters, without so much risk. The taboos of our society make this kind of thing difficult to discuss, but it is so fundamental and so important that it needs to be publicly debated more often. We are fundamentally sexually procreative beings not merely at the level of genes, but also at the levels of memes, and meme-complexes. We conjugate each others' ideas to recreate and propagate them. This is a very personal and romantic process, not a cold cognitive-machine process. Again, the play and film: "Educating Rita" dealt with this aspect of distance education reality which has scarcely been touched upon in the distance education literature (but, see Holtzclaw, 1986).

There are other unique strengths of distance education (C. Amundsen, 1987) but these two are what will be considered further here.

STANDARD DEFINITIONS OF DISTANCE EDUCATION

The main well-accepted definitions of the field of distance education are empirical ones put together by practitioners working in organisations which provide correspondence, and or broadcast education, who find that they have common interests which are different from those of other educators. One of the most widely quoted is that of Keegan (1980), who specifies these six defining characteristics: "1-separation of teacher and learner, 2-influence of an educational organisation, 3-use of technical media, 4-provision of two-way communication, 5-possibility of occasional meetings, 6-participation in an industrialized form of education". For professional organisational and many research purposes Keegan's approach is excellent.

However, the contention here is that to align our enterprise with the deepest and most urgent priorities of this planet's living mantle, and with the deepest educational struggles of each learner, distance education should also be defined theoretically in terms of the uniquely relevant kinds of transformative learning process which it permits.

Distance education should permit deeply transformative education for large numbers of people all over the world, because it can provide even the very timid learner with flexible escape from immediate contextual pressures, as well as intellectual nourishment, and suitably distanced mentorial friendship. The last is possibly the most important from the emancipative standpoint since, in addition to the safe private space in which to grow new personae, there is a need for new role models and various kinds of guidance which may or may not be provided by the more mechanized and standardized parts of distance education. This is already recognized by eminent leaders in the field such as Kevin Smith: "...distance education is more likely to succeed if the individual student is made the central focus of our endeavours and we respond to his or her needs notjust as a learner but as a whole person who needs a variety of forms of support in addition ot academic guidance." (Smith, 1982)

BASIC THEORY

It seems that in general our actions at any given time are fully controled by four sub-systems: -i) Arguably (Brissett & Edgely, 1975), the most important is the SITUATION in which we find ourselves (the physical spaces-"set", other actors and especially their immediate demands, etc.) ii) Probably the next most important is our INTERNAL "CAST" of actors (ROLE-MEMES, super-ego, ego, Id, or "p" individuals), iii) then comes the cargo of other parasitic memes which we host and which burst forth to try to propagate themselves at the slightest opportunity. iv) Finally the most crucial (though often inactive) is the substratal free-will "Self" which can suddenly well-up to alter the balance among the other components. (Boyd & Meyers, 1987) Here I will call it the radical free-willing locus of Self or "FWSelf" — whatever deep and strange mechanism enables us to exercise some momentary non-physically determined free-will to choose which of our "actors" are to be on-stage and how they shall communicate there.

Most of the time the situation and whichever member of our internal cast is onstage seem to combine mechanically to generate habitual actions. Transformative education, drama, and psychotherapy all attempt to involve the deeper free-will locus, so that it may choose to provoke transactions among our internal "P" individuals (Pask, 1975) which will result in our setting about with much greater self-confidence, at learning to plan, and planning to go on learning.

MERE MEME REPRODUCTION AS MIS-EDUCATION

Education inescapably involves the reproduction and propagation of what Richard Dawkins calls "memes" (by analogy with genes) and mutually-reinforcing "meme-complexes" (Dawkins, 1976, 1983). Unfortunately indeed, much of what is called education involves little more than mere meme reproduction (Bordieu & Passeron, 1977). One danger arising from this situation is that many people have very small regions of real autonomy. Most of the time they just play out some one or another of their meme-roles, selected automatically as it were, by the immediate situation including the other actors around them. At the very least a good education should help us make deeply intentional, and largely autonomous choices of the appropriate personae (meme-roles) to bring onto the various playing fields of public life. A conscious understanding of meme-role addiction, and meme-pushing (which is analogous to drug "pushing") should be developed as a normal and necessary hygienic aspect of emancipative education.

A commonplace notion of education is that it provides factual knowledge, procedural skills, and useful acquaintances. There are also "motherhood" aims of education concerning the building of character (self-discipline, civic spirit etc.) which in our age of faith in technical rationality we tend to downgrade as vague (non-operationalizable) products of weaker souls. In my view the general aims of legitimate public education, and they are interdependent ones, should be: cultural rootedness, a cooperative integrative predisposition and abstract and concrete, knowledge and skill based cultural potency. There is a certain, more apparent than real, disjunction between such aims and let us say Charley's immediate need for an accounting course to help him learn the skills to keep his garage from going bankrupt. Distance education can serve all three of the posited legitimate educational aims. And also serve both Charley and a would-be academic. Moreover it can serve our collective need to create a more viable society.

From an Olympian standpoint one might consider distance education to be just another part of the SITUATION, but usually for the learner, it is not just a part of her or his mundane situation but rather it is a special safe and private place where fledgling new personae chosen by our deeper free-will locus can be nurtured. Distance education has a unique mode of address, unlike the other forms of education, theatre, and therapy there is no immediate synchronous dependency on other people. Moreover, there is a dislocation from the context of daily life. This dislocation limits the pressure that can be put on the learner by educational agents, but not so as to invalidate the educational process. What is more important is that it emancipates the learner from the traps of everyday life so that there is the time and privacy to learn and grow new ways of learning. Also it can provide a kind of safe personal connection to some (in a sense intimate — the sense that one will tell ones lifestory candidly to strangers on a foreign train, in a way that one never would to acquaintances) growth-oriented mentors.

NEW THEORETICAL DRAFT DEFINITIONS

Let us define: "Emancipative Distance Education" (E/DE) as that form of systemically organized responsible education which distances the learner from the pressures of situation, and also provides optimally distanced transformative mentorial friends.

And let us define: "Responsible Education" as any publicly-organised support process provided to enable persons to develop greater: culturally-rooted, responsibly co-operative, personal potency.

Legitimate (in Habermas' 1984, sense) public education must be concerned as much with whether learners are pre-disposed to make responsible cooperative use of enhanced powers, as with how to engender such powers. There is a general belief that the more open learning is the better. But "good closings" are just as important as "good opening" (Klapp 1978). Contemporary technology can provide terrible opportunities for irresponsible action, such as those for the automatic machine production of new viruses, or those provided by the new compunications facilities so easily usable for fraud and blackmail. The term potency is chosen delibrately to emphasize the re-productive and propagative quintessence of human action. Like artistic and articulate animals we create, conjugate and competitively propagate cultural forms. But what sets us apart is that we can choose to break a habit, we can imagine futures and choose moral/ethical roles in preference to ones merely triggered by the situation. To express it rather crudely; we are not just addicts and pushers of patterns which feel pushable. We are able to rise above merely reproducing meme-complexes, by exercising moral judgment. To a significant extent, with the help of friends, we are able to choose which of our role-memes we will propagate, and how we will change what has been thrust upon us. We can choose to learn adaptively as we teach, thus "pushing" the meta-pattern of long-term mutual assistance, which has a chance of going on being propagated indefinitely in the human soup.

For society to exist coherently it must, and awkwardly does, constrain the range of patterns propagated to limit suicide and homicide conducing activity (e.g. cigarette smoking, junk-TV?). More sophisticated societies can seek to cultivate some of the responsible creative and mutually nourishing variety of every person by helping people to rise above mere addiction, so as to consciously re-shape the forms which they/we propagate. In the definition above, this is what is meant by "responsibly cooperative potency".

The approach taken here to formulate and propagate a deeper theoretical definition of "Emancipative Distance Education" was partly informed by the work of Robert Boyd and J. Gordon Myers (1987) who have been developing a conceptualization of "transformative" adult education based on the work of Erik Erikson and upon Jung's concept of the "Self". This E/DE definition also owes much to Kenneth Burkes's "life-as-theatre" perspective (Brissett and Edgley, 1975), and to various catalytic conceptualisations of viral-information e.g. Dawkins' MEMES & MEME-complexes (vid. Hofstadter, 1985). Critical theory and Habermas' ideas of life-world forming meta-discourse are also implicit in this conceptualization of emancipative distance education (Habermas, 1984).

Aside from the illumination they shed on the subject and its proponents, attempts at definitions can be useful in helping us to see new alternatives, and new implications of our choices, when we are confronted with decision-making and planning situations.

TECHNIQUES & TOOLS

If we build on its unique strengths Distance education can be much more than remediation for the failures of schools, or technical band-aid knowledge dispensing. If there is an emancipative vision, and if appropriate soft, hard, and systemic technologies can be chosen and mobilized much more should be achievable soon.

Perhaps enough has been stated here about the vision, but some of the techniques and tools for its realization need to be outlined, at least briefly. Each of these techniques and tools could easily involve a whole paper in itself. When they have been written about elsewhere references are given below.

In order to grow a better world through distance education some of the options are:

i) — to help people emancipate themselves from addictions (such as meme-role and meme-complex addictions, as well as chemical addictions) which generally are both debilitating, and supportive of larger forms of domination. This can partly be done by educationally employing some of the techniques of therapy (reflection, paradoxical juxtaposition, multi-modal communication etc.) in distance education. In particular role-play dramas could be carried on by audio teleconferencing, and endless-story script dramas can be made up using computer mediated text conferencing. These enable communication among personae who otherwise are forced into stale-mating isolation or conflict. Psycho-therapy has been conducted successfully using a video-teleconferencing link. When such links become cheap these techniques may be worthwhile including for distance education students.

ii) — to help people model the systems which include them, in order to determine: where change is needed, where leverage is possible, which extended connections are necessary, and which must be filtered, or cut. Prescriptive cybernetic system modelling techniques (Boyd, 1982) can be most helpful in this task. Certain computer applications software such as Mildred Shaw's KITTEN (1987), and W.M. Jaworski's ABL/W4 J-Maps (1987) which allow for group participation in modelling, can be most useful.

iii) — to arrange and sponsor long-term growth oriented affiliations. — "human capital" is not just competence, it is connected competence. Therefore match-making operations which build networks of people who can appreciate each others' capabilities and trustworthiness are as important as the knowledge and skills training operations of distance education. Conventional Alumni associations such as that of the UK Open University do this to an appreciable extent now. But one new way to do match-making is for the distance education organisation to use computer communications to link-together students, tutors, graduates, and potential employers (Boyd, 1985a).

iv) — We need to actually try to shape the new digital Pattern Perceiving, Processing and Propagating (P4) technologies to fit our educational process needs. For example: Personal Assistant Linker and Shield Systems-PALS together with Personal Attribute Tracking and Handshaking Systems-PATHS, along with Performance Learning Activity Cybernetic Environment Spaces-PLACES may be better forms of computer-communications technology for distance education than what is available now (Boyd & Jaworski, 1985b).

SUMMARY

LIFE-WORLD-MAKING THROUGH DISTANCE EDUCATION

As Jerome Bruner (1987) puts it: " 'world-making' is the principal function of mind, whether in the sciences or in the arts."

Distance education is: an aspect of change, a change agent, and something which is being changed, perhaps radically by the combined workings of econo-politics and technology.

The politics of curriculum and the techniques of instruction throughout most of the world are apparently quite inadequate to ensure the cooperativity and capacity needed to keep life viable on this planet. The ordinary econo-politics of curriculum is too myopic, too pragmatic, too opportunistic. Heretofore most distance education, with the exception of some of the vast Chinese and Burmese projects has been too timid about its aims too peripheral in its self conception for the programmes and projects to have had much real impact on the global situation, on Gaia's chances for survival through the twenty-first century.

To put it another way, specific technical knowledge and skills are seen by governments as an important form of capital to be reproduced, and some investment in distance education is made to that end. But more insight would show that it is really affiliative distance networking and emancipative modelling which are the crucial factors in obtaining socio-economic catalysis from educational investments. Affiliative education (credibility status "know-who"-forming connections into the networks of interpersonal relevant reputation cognizance) is what truly constitutes the most important component of human capital, and therefore should constitute the basis for any realistic development programmes, if these are to lead toward a more viable world.

The thrust of this paper is that with wide acceptance of a more systemic, emancipatory and visionary conceptualization of distance education such as the one sketched out above, more truly globally worthwhile distance education undertakings should be possible.

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A model of attrition for distance education

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INTRODUCTION

Distance education universities throughout the world appear to have high attrition rates relative to those of campus-based institutions (Losty and Broderson, 1980; Holmberg, 1982; Shale, 1982; van Wijk, 1983). It is a dilemma, from an institutional perspective, that so many distance education students choose not to continue towards a goal which they have chosen for themselves. Distance educators are very concerned about the drop-out issue and have devoted considerable time and other resources to address it. Indeed, it has been said that the rate of drop-out constitutes the most significant criterion for decisions about improvements or changes to systems of distance education (Rekkedal, 1981).

A great deal of research has been conducted regarding attrition in all educational settings. By far the largest portion of drop-out research consists solely of descriptions of causal factors attained through empirical research. However, there is now general agreement that what is needed are conceptual models of attrition which recognize the complex interplay of variables which interact over a period of time to produce drop-out. These models lend themselves to multivariate and longitudinal path analyses which are required in order to isolate and measure the relative importance of various factors during the drop-out process.

This paper proposes a conceptual model of attrition for distance education adapted from one developed by Bean and Metzner (1985) for campus-based, adult, part-time students. Variables used to adapt the model are drawn from a study by the author of students' experiences in their first distance education courses at Athabasca University (Brindley, 1987). Significant factors affecting course completion emerged from the study as did findings about the similarities and differences between the experiences of completers and non-completers. The data were used to adjust the variables in the Bean and Metzner model to represent more accurately the distance education context.

BACKGROUND: MODELS OF ATTRITION

A few conceptual models have been introduced in the attrition literature. Some of these are narrow, taking only one or a few factors into consideration. Others are much wider, encompassing the interaction of student, institutional and environmental factors. The latter tend to be more useful for research purposes and for planning retention strategies.

Spady (1971) is usually credited with introducing the first model of attrition. He used Durkeim's theory of suicide as an analogy for drop-out. His model described the assimilation process of a student into an educational institution, taking into account student characteristics and the institution's social and academic demands. Spady's theory was that if the student could meet the demands of the institution and felt rewarded in the process, it was likely that successful assimilation and persistence would be the result.

Tinto (1975) developed a theory similar to Spady's but went beyond description of the process to build a predictive model. Tinto viewed the educational institution as a social system into which the persisting student became integrated over time. He described the integration process as a series of interactions between the person and the social and academic systems of the institution. The person entered with certain completion goals and institutional commitments which, over time, were modified by the quality and frequency of social and academic interactions. Depending upon whether the students' goals and commitments were strengthened or weakened by this process, they would drop out or persist.

A number of studies have tested the Spady and Tinto models. The best known of these are the validation studies of Pascarella and Terenzini. They have found support for the Tinto theory in a variety of ways. In a study of freshman year students at one college, they were able to show, to some degree, that student characteristics and academic experiences interacted to produce persistence or drop-out decisions (Terenzini and Pascarella, 1978; 1979a).

In another study, they were able to isolate student-faculty contact as a variable and showed how this contributed to both social and academic integration of the student according to the Tinto model (Pascarella and Terenzini, 1979b). Another of their studies looked at the construct validity of Tinto's conceptual framework (Terenzini and Pascarella, 1980) and found support for it. Although they felt that Tinto overstated the importance of student characteristics, they found that the model's two major constructs, social and academic integration, were significant in distinguishing between persisters and voluntary leavers. Pascarella and Terenzini (1980) also found support for the predictive validity of social and academic integration for attrition and completion by developing and testing a multidimensional measurement instrument to assess the major dimensions of the Tinto model. They concluded that the model was useful for theoretical and research purposes, as well as for practical purposes of planning retention strategies.

Adult part-time students do not fit the Tinto model because they have much less interaction with faculty and fellow students than younger part-time students who spend much more time on campus. Hence, social integration as defined by Tinto does not contribute in the same way to their goals and institutional commitment. The significant others in adult students' lives are usually the same ones they had before commencing their studies — family, friends, employer and co-workers. This is particularly applicable to distance education students who study in their own homes and have even less contact with faculty and other students than do campus-based part-time learners. Bean and Metzner (1985) developed a conceptual model of the attrition process for adult part-time students. They proposed that withdrawal decisions were based on four sets of variables: (1) background and defining variables of the student such as age, enrolment status and gender; (2) academic variables such as study habits and course availability; (3) environmental variables such as finances, hours of employment, outside encouragement and family responsibility; (4) psychological outcomes such as perceived utility (of studies), satisfaction, goal commitment and stress. These sets of variables can contribute directly, indirectly or can interact to contribute to the drop-out decision.

SIGNIFICANT FACTORS IN DROP-OUT FROM DISTANCE EDUCATION: WHAT STUDENTS TOLD US AT ATHABASCA UNIVERSITY

It is clear that the content of the sets of variables and the relative importance of variables in an interactional model of attrition is entirely dependent on the particular student population, and what students perceive and experience as being important to their persistence. In a study conducted at Athabasca University from 1984–86 (Brindley, 1987), significant factors affecting completion were identified by students. A summary of the results is presented below.

Forty students enrolled in their first course at Athabasca University were chosen at random from eight courses (five students from each course). This process was carried out soon after the start date without regard for the students' progress in the course, their demographics or any other factors. Although the students were chosen through simple, random selection, and the sample was relatively small, their demographics matched those of the student population of the university in a number of important ways (age, gender, educational background and motivations for studying). In the final analysis, the completion rate for the sample also matched that of the population. Students were interviewed by telephone eight to ten weeks after their start date using Flanagan's (1954) Critical Incident Technique, a method for eliciting incidents (defined as a thought, feeling or experience) which hinder or facilitate some aim, in this case, course completion.

The 40 students in the study reported a total 265 incidents, 113 facilitating and 152 hindering incidents. The average number of incidents reported per student was 6.6 One student reported that nothing had hindered his progress while two students could identify no facilitating incidents. Of the 40 students, 15 (37.5 percent) completed their courses, and 25 (62.5 per cent) did not. The 15 completers reported 108 (40.75 per cent) of the total 265 incidents, 50 (46 per cent) facilitating and 58 (54 per cent) hindering. The non-completers reported 157 (59.2 per cent) of the total 265 incidents, 63 (40 per cent) facilitating and 94 (60 per cent) hindering. Although the total number of incidents reported by each of the two groups (completers and non-completers) was consistent with their size (i.e. completers made up 37.5 per cent of the group and reported 40.75 per cent of the incidents), there were noticeable differences within particular categories of incidents.

The 265 incidents were sorted into groups of common meaning until 13 basic categories emerged. Two raters were used after the final sort to determine reliability of the basic categories. Both achieved interrater reliability of over 90 per cent. The basic categories are bipolar, having the potential to include both hindering and facilitating incidents. A description of each of these categories is provided below:

(1) *Student Interaction with the Institution*
This category excludes the student's instructional contact (i.e. with the tutor) but includes all other contact by telephone, mail/print, or in-person.

(2) *Personalized Instructional Support*
Personalized instructional support is given in addition to the learning package and is usually provided by the tutor and/or course co-ordinator by telephone. It includes instruction on course content including feedback on assignments, guidance in approach to learning and encouragement.

(3) *Discovery about the Course/Support Materials/ Approach*
This category includes incidents where students discovered something about the course, their approach to it, or support materials which made a difference to them.

(4) *Pre-Course Preparation/Prior to Expectations*
The incidents in this category either happened before the student started the course or are related to expectations held before the course began.

(5) *Received Encouragement/Support from Source Outside of the University*
Encouragement, support and instruction were given by family, friends and colleagues outside of the University.

(6) *Deadlines and Schedules*
This category includes incidents resulting from deadlines and schedules imposed by students, their circumstances or the institution.

(7) *Personal Realization*
These are incidents when students realized something about themselves such as their ability, their progress in the course, their approach to learning and feelings about the course.

(8) *Thoughts About Longer-term Goals*
These are incidents where students thought about how the course related to their longer-term goals, usually career and educational.

(9) *Marks Received*
These incidents are ones where the marks received in the course had a direct effect on the way the student felt about doing the course. Although no students in this group reported hindering incidents, students in the circumstances other than this study have reported negative or hindering effects from marks received.

(10) Change in Time Available/Circumstances
This is the largest category and includes all those incidents where students reported that something in their life changed which made a difference to the amount of time spent on their course. It includes such things as illness, vacation, work changes, death of a relative, season changes and move of residence.

(11) *Course Content*
This category includes those incidents which students directly attributed to the subject matter of the course as opposed to the design.

(12) *Course Design*
This category has to do with the design of the learning package: the instructions given, support materials, examinations and general layout.

(13) *Practical Application of Learning*
This category includes incidents where students reported being able to relate the course to their experience. It facilitated them in their course if they saw this as being helpful, and hindered them if they saw it as being redundant.

Tables 1–3 summarize the major findings of the study.

The participation rate indicates the strength of the categories by showing the extent to which different participants in the study reported the same kind of incidents as hindering or facilitating their goals. Ta-

Table 1 — Basic Categories Participation Rate

	Category	% of students reporting incidents in each category	No. of incidents	
			Facilitating	Hindering
1.	Student interaction with the institute	20 %	6	4
2.	Personalized instructional support	50 %	15	12
3.	Discovery about the course	43 %	9	18
4.	Pre-course preparation/prior expectations	35 %	5	13
5.	Encouragement/support from outside the University	43 %	20	2
6.	Deadlines and Schedules	25 %	10	3
7.	Personal realization	63 %	16	21
8.	Thoughts about longer-term goals	10 %	2	2
9.	Marks received	20 %	9	0
10.	Change in time available/circumstances	80 %	4	52
11.	Course Contact	23 %	7	5
12.	Course design	38 %	5	15
13.	Pactical application of learning	20 %	5	4

Table 2 — Comparison of Participation Rates in Categories Between Completers and Non-Completers

	Category	Completers (15–38%)	Non-Completers (25–62%
		% of completers (out of 15) reporting incidents	% of non-completers (out of 25) reporting incidents
1.*	Student Interaction with the institution	6 % (1)	28 % (7)
2.	Personalized Instructional support	47 % (7)	52 % (13)
3.*	Discovery about the course	53 % (8)	36 % (9)
4.*	Pre-course preparation/prior expectations	27 % (4)	40 % (10)
5.*	Encouragement/support from outside the University	60 % (9)	32 % (8)
6.*	Deadlines and schedules	40 % (6)	16 % (4)
7.*	Personal realization	53 % (8)	68 % (17)
8.	Thoughts about longer-term goals	6 % (1)	12 % (3)
9.*	Marks received	33 % (5)	12 % (3)
10.	Change in time available/circumstances	87 % (13)	76 % (19)
11.	Course content	20 % (13)	24 % (6)
12.*	Course design	60 % (9)	24 % (6)
13.	Practical application of learning	20 % (3)	20 % (5)

* Categories where there are noticeable differences between the two groups' participation rates.

ble 1 shows the participation rate by percentage of students reporting incidents in each category. The actual number of incidents which the percentages represent are shown also.

Table 2 shows a comparison of participation rates between completers and non-completers for each category. For both groups, there is at least one subject in each category. There are noticeable differences between the groups' participation rates in 7 of the 13 categories. The participation rates are partly a reflection of the relative importance attached to each category and for these reasons it is important to compare persisters and non-completers.

Table 3 compares completers and non-completers in another way. It shows the ratio of facilitating to hindering incidents in each category for the two groups. There are noticeable differences in only four categories. In general it can be said that the kind of incidents which held the non-completer back, also hindered the completer. Apparently, the completers responded differently than the non-completers to these incidents. Of particular interest is Category 10 — Change in time available or circumstances. Throughout distance education literature, this is cited as the most often provided reason for drop-out (Woodley and Partlett, 1983). This study shows that persisters experience just as many instances of this type of hindrance.

A MODEL OF ATTRITION FOR DISTANCE EDUCATION

It is clear from the findings of the Athabasca study and other drop-out research that the attrition process is a complicated mix of student, institutional and environmental variables which interact over time to produce a drop-out decision. So far, the conceptual model which appears most useful in describing this process in the distance education context is the one developed by Bean and Metzner (1985), specifically for adult, part-time commuter students.

Their model proposed that withdrawal decisions were based on four major categories of variables: (1) background and defining characteristics of the student such as age, enrolment status and gender; (2) academic variables such as study habits and course availability; (3) environmental variables such as finances, hours of employment, outside encouragement and family responsibility; and (4) psychological variables such as perceived utility of studies, satisfaction, goal commitment and stress.

Bean and Metzner proposed that these four sets of variables could contribute directly or indirectly, or could interact to produce outcomes of performance (marks) and/or an intention to leave which could lead to a drop-out decision. They described four ways in which the model was interactive.

Firstly, there were direct effects between variables or between variables and outcomes, such as that which a lack of course availability might have on a decision to drop out. Secondly, there were direct effects presumed most important, such as the impact of study habits on marks. Thirdly, there was provision for the possible effects of lesser variables such as Tinto's (1975) social integration variables.

Lastly, and probably the most importantly, were the compensatory interaction effects among sets of variables. The simplest way to define these is to illustrate with an example used by Bean and Metzner. It has been shown that environmental variables are an important factor in persistence for adult students. At the same time, it has been shown that academic variables are an important factor in persistence for almost all students. Bean and Metzner proposed that when both of these sets of variables were favorable to persistence, the students would most likely drop out. However, if academic variables were favorable but environmental variables were not, adult students would still be likely to drop out because the academic variables would not compensate for poor environmental support. On the other hand, if there were favorable environmental conditions but poor academic variables, the adult student would still be likely to persist because, for them, environmental support could overcome the academic variables.

The factors which were reported as being critical to persistence by students in the Athabasca study can be used to modify the Bean and Metzner model to reflect the distance education context. The four major categories of variables, the outcomes and the interactional effects of the model appear appropriate, but some of the content within the major categories requires change. For example, one sub-category under "Academic variables" is "absenteeism" (Bean and Metzner, 1985; 491). This is obviously not appropriate to the distance education context.

It is proposed that the four major categories of variables in the model could be modified as follows, using findings from the Athabasca study. Additions are marked with an asterisk and proposed deletions are noted. Some factors have been left unchanged. This recognizes the appropriateness of the rationale for inclusion given by Bean and Metzner to the student population addressed in this study. The rationale for changes to the model is provided immediately below the following summary of the modified categories.

(1) Background and defining variables

- age
- enrolment status (*specify program/non-program)
- residence (*urban/rural)
- educational goals
- high school performance (*if applicable)
- *highest level of education achieved
- ethnicity (delete, unless studying special groups)
- gender

Table 3 — Comparison of Ratios Between Facilitating and Hindering Incidents in Categories for Completers and Non-Completers

	Category	No. of incidents reported by completers		No. of incidents reported by non-completers	
		Facilitating	Hindering	Facilitating	Hindering
1.	Student interaction with the institution	0	1	6	3
2.	Personalized Instructional support	5	3	10	9
3.*	Discovery about the course	7	6	2	12
4.*	Pre-course preparation/prior expectations	2	3	3	10
5.	Encouragement/Support from outside the University	10	1	10	1
6.*	Deadlines and schedules	7	1	3	2
7.	Personal realization	6	7	10	14
8.	Thoughts about longer-term goals	0	1	2	2
9.	Marks received	5	0	4	0
10.	Change in time available/circumstances	2	23	2	29
11.	Course content	2	1	5	4
12.*	Course design	2	10	3	5
13.	Practical Application of learning	2	1	3	3
	TOTALS	50	58	63	94

* Categories where there are noticeable differences between completers and non-completers with regard to the ratio between hindering and facilitating incidents.

(2) Academic variables

- study habits
- major certainty
- *information} (intended to address "Pre-course Preparation/
- *orientation} prior expectation" and "Discovery about course")
- academic advising
- *study skills assistance
- *assessment (intended to partially address "Discovery and self")
- *career planning
- *deadlines and schedules/pacing
- *personalized instructional support
- *course content
- *course design
- course availability
- absenteeism (delete)

(3) Environmental variables

- finances
- hours of employment
- outside encouragement
- family responsibilities
- *change in time available/circumstances
- opportunity to transfer

(4) Psychological outcomes

- utility (*includes "Practical application" and "Longer-term goals")
- satisfaction
- *personal realization
- goal commitment (*defined as importance of completing the course)
- stress (delete in favor of more explicit variables)

The first category, "Background and defining variables", was modified using the information about defining characteristics of the population. In the Athabasca University context, enrolment status can be widely defined as program and non-program. Since commitment to a program of studies has been seen as a factor in persistence in the literature, this wide definition was seen as an important variable to test.

Residence is defined as either urban or rural. It is commonly thought that distance education students are mainly from rural areas which do not have a campus-based institution, but, in fact, over 60 per cent of the Athabasca University student population are from urban areas. It is speculated that the two groups are different in their motivations for choosing distance study, and in the outside resources which are available to them, such as library facilities. For this reason, location is commonly used as a defining characteristic in institutional analyses of the student body, so it is important to test its significance for persistence.

The Athabasca University open admissions policy means that students have much more heterogeneous educational backgrounds than at institutions with more specific entrance requirements. Since past educational achievement and experience are consistently noted throughout the literature as being important to persistence, this characteristic was added to the model. High school performance was left in because it has been shown to be an important variable but students at an open university may not necessarily have attended high school.

Ethnicity has never been an important defining characteristic of Athabasca University students nor does it appear as an important factor in the distance education literature. For this reason, it should be deleted unless special groups are being studied.

A number of factors have been added to the "academic variables". These all fall into the category of retention strategies to be tested. Bean and Metzner suggest that if major efforts are being made by an institution to address attrition through particular programs, these should be added as variables in this category. The retention strategies chosen reflect the findings of the Athabasca study but the rationale is not addressed by this paper (for a more complete discussion of retention studies see Brindley, 1987).

Change in time available and circumstances was the only factor added to "Environmental variables". This was the factor from the study which had the highest proportion of students reporting incidents. It is also the factor affecting persistence in distance education which is most often cited in the literature. Interactional effects between this and other variables need to be studied given that the persisters reported an equal amount of hindering incidents in this category as did the drop-outs.

Under "Psychological outcomes", there was one addition and two clarifications of definitions. "Personal realization" was added because this was reported by 63 per cent of respondents to the study and it was seen as a psychological outcome of their experience in their courses which had a direct impact on their persistence. An example of this was a realization about being capable of university work. Utility was redefined to reflect the way in which students in this study described it, which included immediate practical application of studies and relation to longer-term goals. Goal commitment was redefined as commitment to completing one course as opposed to a program because this more accurately reflected the aspirations and behaviours of the student population. The defining characteristic of program/non-program was also included in the first set of variables.

IMPLICATIONS FOR FURTHER STUDY

With the modifications described above, the Bean and Metzner model appears appropriate to the distance education context and, as such, can be used as a framework to set out more clearly what is already known about attrition and as a guide for future studies. Some caution is warranted in generalizing the findings of the Athabasca study and the resultant model across institutions. Major institutional differences in areas such as entrance requirements and intentions of students to transfer or complete a degree should be considered.

In order to develop the model further, research is needed to confirm or reject factors found to be significant to persistence and to determine their relative importance. For example, evaluative research is needed to test the efficacy of the suggested retention strategies. Work is also required to understand better and to test the interactional effects which occur among variables.

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Using distance constructively: indicators of success for continuing education

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When a professional association adopts a low tech distance mode for one of its courses, the drop-out rate is 3 per cent and the students express high levels of satisfaction with the course, it is time to pause and reflect. How does one explain such a success?

This paper identifies the problems, contextual factors and events that created one four-month course. It outlines the major planning assumptions, their relationships to what actually happened and the results of the first two components of a responsive evaluation process. A *responsive evaluation* approach (Stake, 1983) was used in preference to other models in order to expand, not limit our ideas and interpretations.

The work outlined here is grounded in a particular landscape of values and practice. Part of the topography is associated with existing distance education arguments for structure and two way communication e.g. the "guided didactic conversation" concept (Holmberg, 1983) and student needs for distance learning (Moore, 1987).

Another area is grounded in our concerns that distance learning designs may perpetuate inappropriate levels of teacher control and reduced levels of authentic choice and self-responsibility for students. This concern is not new (Daniel and Stroud, 1981; Fales and Burge, 1984; Jarvis, 1981; Taylor and Kaye, 1986) but it does not yet command prominence in the discussions of course design and evaluation models in distance education.

The final topographical aspect is grounded in selected assumptions about adult learning: Knowles's (1985) ideas on supportive and collaborative climates as well as learner needs and self-imposed limitations and strengths (humanistic psychology); Mezirow's (1981) conception of the competent learner; and a learner centred view of territories (Rogers, 1986; Boud and Griffin, 1987; Brookefield, 1986).

Taking a learner centred view in adult education is not easy, especially for distance modes in which one is attending to differing levels of learning processes (both cognitive and affective) (Cagne, 1977; Bloom, 1977; Mager, 1975) and types of learning outcomes (e.g. instrumental, dialogic or self-aware) (Mezirow, 1981).

This paper claims a place in the distance education landscape because of its:

(a) focus on adulthood without loss of academic rigour, "soft andragogy"
(b) refusal to accept that distance mode learning is qualitatively different from learning in other contexts
(c) independence from the concept of industrialised mass-scale education
(d) potential for extrapolation by colleagues interested in low budget, responsive and successful programming geared to small student numbers.

1. THE PROBLEM AND ITS CONTEXT

A province of 1,000,000 square kilometers, Ontario has over 1,100 museums, galleries and archives, staffed by 9,000 salaried workers and 7,000 volunteers. Training needs for this diverse group have been addressed by two provincial associations. Each has offered short, intensive, face-to-face workshops in regional centres but with no consistent standards and little follow-up activity. Some distance mode courses were also available but they did not focus on Ontario conditions, nor on theoretical and conceptual issues. Additional aspects of the education problems were:

(a) insularity and the isolation of staff from adequate professional resources
(b) lack of time, money and encouragement to attend workshops
(c) neglect of theoretical and critical perspectives (museology to inform practical museum functions adequately). This issue has long polarised the museum community: "professionals" argue for the "mastery of both learning (theory) and method" (Coleman 1939); while those in the "field" argue for hands-on techniques
(d) a recognition by museums of the need to increase levels of public awareness while not having the tools to do so.

2. ADDRESSING THE PROBLEM

The Ontario Museum Association hired two writers to develop a printbased course: to be run as a pilot to test the usefulness and acceptance of distance mode of delivery.

COURSE CONTENT

Course content focused on mastery of historical and theoretical issues in museum development. Two key areas were context and societal relevance — by grounding the macro theory in the micro context of the learner's own museum, abstract ideas were perceived as practical and relevant. The aim was also to challenge or "jolt" the learner, even if that meant contention and resistance; to encourage recognition and application of personal experience and, most important, to question — to ask "why" from a basis of critical knowing and analysis of personal experience.

COURSE PROCESS DESIGN

We drew on neo-behaviorist and cognitive psychology and human approaches to identify the appropriate roles and responsibilities for learner and tutor and the integrated functions of the resource materials. The learner would organise information and construct meanings via expository and experiential modes. The climate, of which the tutor is a major part, would offer empathy and respect for the learner's own experience and her or his implicit theories about the world, legitimise anxieties of learning and foster self-esteem and self-competence as both a learner and museum worker.

Cognitively, in the course design, learners were encouraged to:

(a) articulate other people's facts, concepts, theories, principles and rules
(b) recognise their application by others in differing contexts
(c) apply them under personal/local conditions
(d) analyze their existing practice and local contexts
(e) problem solve in case studies or real life situations
(f) use effective communication skills
(g) interact productively with peers.

Affectively, the learners would be encouraged to deal with the emotional aspects of the ideas and values they held vis-a-vis museum work, as well as about learning as a process in itself. Risk taking, getting a rapid sense of achievement, identifying with a group, taking responsibility, not being judged by a superior omniscient authority — all were considered important affective processes. Stress in adult learning was another consideration: perceptions of information overload, fear of failure, threats to self-concept and self-esteem — all would likely interfere with informative acquisition and elaborate cognitive processing. The tutor would escape the role of information transmitter and instead focus on the four "c"s: confirmation of learning, correction when necessary, contribution of new information as appropriate, and challenging the learner to more sophisticated thinking.

THE LEARNING PROCESS AND ITS RESOURCES

The final mix of course materials and learning processes was the inevitable compromise between quality and resource constraints:

- An introductory manual, one learning guide and reading resources for each of the 11 units.
- Each guide contained a brief synopsis of content; learning objectives; guide to the reading materials; suggested site visits and a series of self-reflective and dialogical questions (not self-assessment questions). These moved from the simple to the complex, introducing global issues within relevant contexts. They were equally suited to the individual working alone or within a learning partnership or group.
- Reading resources included specially written notes from an acknowledged critical and controversial perspective.
- Assignments, written or verbal, designed to:
  (a) build awareness and establish and maintain learning dialogue
  (b) pace the development of writing and research skills
  (c) facilitate more sophisticated cognitive activity
  (d) allow students a vehicle for research (a rare opportunity in the museum community)
  (e) offer students the responsibility of instigating original research on local museum development and contributing personally to the evolving body of knowledge (with the added

incentive of it being incorporated back into the course materials).

- One face-to-face workshop for socialization, peer support and learning, help with assignments — and sheer fun.
- Student newsletter.

3. COURSE IMPLEMENTATION

The course ran from June to September 1987, traditionally very busy months for museums. Enrolment had to be limited to 90 students. Two registrants dropped out for reasons that were not related to the course.

Students were widely scattered across the province — the farthest located 3,200 km from the tutor and the closest working in the same office.

Of the students 78 per cent were women, the majority aged between 25 and 35 years; 50 per cent had university degrees (B.A. to Ph.D.); 56 per cent were curators working in small, community museums; 9 per cent were volunteers.

As part of relationship building at the start of the course, a "norm setting" procedure asked students:

- What are your aims in taking the course?
- What, if anything, is worrying you about the distance mode of delivery?
- What aspects of the course are you looking forward to?

The responses were textbook conditions for facilitation of adult learning — they were taken seriously by the tutor and students alike.

Contact between tutor and individual students was intensive and frequent, and included many unsolicited comments. Students explained their enthusiasm in terms of being able to use their initiative or work with peers:

> Our learning group of four has met three times so far and the exchange of ideas has been useful. I have found it very helpful to have people to discuss aspects of the course with.

Exploring new material was of equal importance:

> With all the readings many ideas are confirmed and new ones come to light and more thoughts on the subject evolve...

As was relating comfortably with the tutor:

> I sincerely appreciate the fact that you have taken the time to really read my assignments... you could have just skimmed — but you didn't — that is very important to me...
>
> Your words of encouragement... gave me a renewed incentive each time I started a new (assignment).
>
> Thank you for... understanding my concerns... I really was feeling inadequate, but after talking with you, you gave me the encouragement to move ahead.
>
> In summarising her learning experience one student wrote:
>
> It's been fun and exciting... This course has been the most positive thing to happen to me in the way of education — ever!

As soon as students jettisoned habitual second-guessing of tutor expectations for assignments and developed their own ideas, they regarded the assignments much more positively and constructively. Predictably, many students displayed perfectionist tendencies and took on unrealistic work loads, despite advice to the contrary! Some students expected the tutor to be inflexible and authoritarian and at first seemed prepared to live out a role of dependence. As the course progressed, students were encouraged also to have fun and not to feel stifled by their own fears about deadlines — in short, to let go of their conventional and inappropriate expectations about the course.

At first, 75 per cent of the tutor's interaction with students was spent in counselling and other affective activities — "stroking" and helping students integrate the course into their day-to-day work. The extent of reassurance and legitimization of anxiety was based on the need to reduce learner stress without denying autonomy and the legitimate processes of discomfort in learning.

The following selected specific results are based on analysis of tutor-kept records from a mid-course written feedback (response rate 50 per cent).

HIGHLIGHTS OF EVALUATION

- 71 per cent indicated high, or very high, levels of satisfaction with the course generally.
- Tutor feedback (both audio and written) also was rated at a high or very high level of satisfaction as was the adequacy of access to the tutor.
- 63 per cent of respondents rated their work load as either reasonable or "it varied, but generally O.K."
- Most students spent 3–6 hours per week on their course work as predicted.
- As anticipated, time problems were most often cited as the low point of the course.

4. DISCUSSION

In short, the course content and process has worked extremely well.

What have we learned at this stage?

1. The adherence to an adult learner centred view is crucial, but the tutor has to be prepared to make fast and radical changes to meet learner needs.
2. The integrated set of design assumptions and principles drawn from cognitive and neo-behaviouralist psychology and humanist psychology

were appropriate for this example of continuing education.
3. For the learners, the social, interactional and learner support functions and skills of the tutor were very important.
4. In such a learner centred design the accessibility of the tutor is pivotal in human, as well as cognitive and logistical, forms.

No doubt new areas for study will emerge when final evaluations have been received. We need to do more work in certain areas — for example, how to improve service to those registrants from the far North (13 per cent), who still felt isolated? What are the long-term support structures needed to facilitate delivery of further training? Finally, what is the real cost of establishing and maintaining maximum tutor support to a group diversified by need, resources and ability?

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The application of discrepancy analysis to the developement of existing university courses for distance education

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Distance educators are still defining their roles in traditional universities offering courses at a distance. The usual response is to develop new courses for distance education using a systems approach. But the sheer numbers of courses available in the university affect the decision to develop a new course or adapt existing courses to distance education. Creating new courses for distance education has the effect of creating a separate course and administrative structure instead of using those already in place.

Distance education is still regarded by many as a peripheral activity in the university and is vulnerable (Carl, 1986, 1984; Hackman, 1984; Harrington, 1977). Distance educators should be aware of this vulnerability and integrate distance education with the core programs of the university. Making distance education course development part of the routine activity of academic departments is one way of achieving integration with core programs. This means the campus course is the basis for the distance education version.

Technology facilitates integration. The newer interactive technologies of videoteleconferencing, audioteleconferencing, and computer conferencing favour integration more than noninteractive technologies.

Carl (1986) argued for "piggybacking" the distance course on the on-campus presentation to students. Examples of this approach can be found throughout North America but very little information about the preparation of faculty and courses for this tandem distance education/on-campus education format was found in the literature.

Few researchers have explosed the combination of distance and face-to-face presentation. Holmberg (1985) discusses combination, but it is unclear whether he is referring to the instructor teaching both on-campus and distant students or to the use of distance procedures combined with some oral classes with distant students. Haughey (1983) and Catchpole (1985) describe the delivery of videoconferenced courses exclusively for distant students.

Parker and Olgress (1980) recommend that for audio teleconferencing the instructor have no students in the same room lest the instructor mold the presentation to the face-to-face group.

However, is a separate section really needed? Can faculty be trained to manage both face-to-face and distance groups simultaneously, so engaging in distance education while carrying out their on-campus duties?

Faculty are most familiar with face-to-face teaching. They have been reluctant to adopt changes which separate them from their students and are skeptical about incorporating advanced technologies into teaching. Even with interactive technologies there is a problem when the students are visible by the professor. There is no visual feedback showing how the students are responding to the instruction and to the technology.

Few models or case descriptions in the literature could serve as guides for the systematic analysis of an existing course for adaptation to distance education. Barrow and Meachem (1983) adopted the "science of muddling through" described by Lindblom, Stubbs, Lumsden, and Knapper (1985) describe muddling through at the University of Waterloo. Holloway (1984) gives a model for adaptation (based on grounded theory) in very general terms. Vedros and Foster (1981) and Kaufman (1972) presented models for removing defects from instructional programs at a macro-system level but provided little guidance about individual interactions between teacher, subject matter, and students.
Mager and Pipe (1970), Harless (1971), and Gilbert

(1974) described a method for detailed analysis termed discrepancy analysis. While the names of these three models may appear different, the analyses are strikingly similar. All compare the actual situation with a model situation. Gilbert's model focused on the elements of the interaction to determine where in the learning transaction the problem is.

Gilbert stressed the importance of viewing a system as an entity whose components combine to achieve the goals of the organization. He called his method "mathetics", which is "the systematic application of reinforcement theory to the analysis and reconstruction of those complex behaviour repertories usually known as 'subject-matter mastery'." (Gilbert, 1962, p. 8). He recognized the need to establish a model of performance to which the actual performance can be compared. In establishing the model the extant values in the performance can be articulated and assessed for appropriateness as a basis for performing. (He notes that establishing the standards for performance can be one of the more interesting contributions the ID can make to an organization.)

The simplest unit upon which mathetics builds is as follows:

$$S \rightarrow R \cdot Sc$$

where S is the stimulus (or presentation to the student), R is the response the student gives to the stimulus, and Sc is the reinforcer which becomes the stimulus for the next response — thus setting the stage for chains, discriminations, and generalizations.

"Gilbert suggests preparation of a behavioral 'prescription', a map of all the separate behaviours that make up mastery of the task being analyzed." (Romisowski, 1981, page 89) This map defines the wanted outcome of the instruction and the systematic relationship of all performance elements to that outcome.

Using a discrepancy analysis, it is possible to find the where gaps in the instruction occur and to locate where in the performance chain the problem is occurring. Gilbert's "areas of causation" for non-performance are as follows:

- the environment: the environment is preventing clear perception of S, interferes with R, or presents a competing Sc which is stronger than the Sc associated with a model performance;
- the student's repertory of behavior: the student has not learned to perceive the S, lacks the knowledge of how to respond, or has no knowledge of the Sc.
- the students themselves: the students have difficulty perceiving the S, have physical difficulties which prevent R, or do not see the Sc as important. Figure 1 shows the matrix of performance analysis.

DISCREPANCY ANALYSIS

Figure 1.
Performance Analysis

AGENT	S	R	Sc
Environment	Inputs are not clear	Interference prevents the response	Consequences of behavior are out of balance
Student's Repertory of Behaviour	Cannot generalize or discriminate the stimuli	Lacks the skill to make the response	Student gets no confirmation of her/his behaviour
Students	Unable to perceive the stimuli	Unable to make the response	Doesn't care

By focusing on the observable behaviors of the student, a visible referent is provided for discussing examples of adequate and inadequate performance and for evaluating performance and proposed solutions. As the model of performance has been described in observable and articulated terms, it becomes easier for faculty and IDs to observe the effects of the solution and to discuss them. This has been the most valued aspect of discrepancy analysis in redeveloping courses for distance education and in building faculty involvement in the redevelopment process.

Discrepancy analysis has been used for a variety of learners and subject areas. The most notable use is in assessing the need for instruction (McNeil, 1983). In recent years it has not received much attention because it has been viewed as too behaviorally-oriented for the intentions of learning. If the model is applied in a purely technical sense, these criticisms are valid. Learning supercedes behaviorism. Discrepancy analysis as it is used here is intended to create a more conducive learning environment. By analyzing each component of the learning experience in terms of the arrangement of resources for learning (e.g., presentation, print and non-print resources), the kinds of reaction/interaction desired between the student and resource, and the benefits/detriments attached to participating in the experience, one refines the blueprint so that it better accomplishes what is intended. Although one will never know the full effects of an educational experience on a student, through observation and analysis, it is possible to confirm where problems in a student's performance lie.

Using the scheme for existing university instruction, one begins by constructing a model of the ideal performance of a student who would have successfully completed a course. By "backward-chaining", one can determine the relationship of various subbehaviours, presentations, and assignments to the ideal performance, mapping the links and gaps in the existing instruction.

The intentions, presentations, interactions, assignments, and tests are categorized in observable terms which the instructional designer and professor can use in determining the effect of the transaction. In total, through this process the existing course is

(1) analyzed for soundness in its present version,
(2) translated into terms which are more discernible to both the instructional designer and the professor,
(3) mapped to determine the relationship of the various stimuli, responses, and reinforcers to the overall outcomes and to uncover gaps, ineffective stimuli, irrelevant responses, or ineffective reinforcers.
(4) prepared for adaptation to distance delivery using videoconferencing.

HOW THE MODEL IS APPLIED TO DISTANCE EDUCATION

The next phase is to determine the effect of distance technologies on the existing instruction and to plan for effective distance delivery. The distance technology interacts with the elements of the course: the S, R, and Sc and alters them. To examine systematically the effects of the technology a second layer is added to the discrepancy analysis. The intent of this phase is threefold:

(a) to determine the effects of the technology on each element;
(b) to arrive at a prescription to ensure the distant student has
    1. adequate perception and understanding of presentation as it occurs using the technology,
    2. opportunity for responding comfortably via the technology; and
(c) to identify and use valued and recognized consequences to using the technology for instruction.

Each cell of the discrepancy analysis is examined to determine the effect of the technology on that cell. By examining each cell, the estimated and observed effects of the technology can be diagnosed so that a prescription can be written for a more effective education experience via the technology.

The model has been applied with three types of interactive technologies: videoconferencing, audioconferencing, and computer conferencing. Results of evaluations over several semesters have in dicated that courses developed using this model give equivalent outcomes and acceptability of the course for both on-campus and distant students.

In 1985 structured interviews were conducted with faculty involved in the videoconferenced distance education program which used discrepancy analysis. Interviews were conducted with 9 faculty whose courses had been prepared for distance education using this method. Eight indicated that the process was acceptable and they would be willing to repeat it.

DISCUSSION

Developing separate, parallel courses for distance education in a traditional university may pose more problems than it solves. It is difficult for academic departments to assess the effects of the distance course. This is partly due to the vagueness of the learning intentions for the existing course, which makes it hard to find usable criteria for the development of distance versions of the course. Discrepancy analysis accepts the values underlying the classroom presentation as a basis for developing the distance course. The existing course is analyzed to determine how the values are operationalized in the on-campus course, and existing class dynamics are analyzed for the changes due to the use of distance technologies.

Using this approach it is possible to integrate some distance education into the routine teaching responsibilities of faculty. Such integration may have implications for remuneration practices for distance courses if this kind of on-campus/distant course becomes a realistic possibility. In terms of preparing greater numbers of courses for distance education, discrepancy analysis appears to allow further permeation than current development paradigms now permit.

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Introductory accounting on DUET — a comparative evaluation

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INTRODUCTION

The combination of cable television service, live television signals, telephone, and audio conferencing bridges into a "educational videoconferencing" service has been used to expand access to university courses. Some previous work has examined videoconferencing exclusively to distant students, i.e., where the professor is alone with no students in the room and addresses students over television and telephone. Little has been done, however, to examine classroom presentations delivered to both on-campus and distant students at the same time.

Parker and Olgress (1980) recommend that the instructor have no students in the same room when giving an audio teleconference as there is a tendency to mold the presentation to those present in person. It is doubtful whether this advice is valid for videoconferencing. The lack of visual stimuli may affect the quality of interaction between the audio instructor and students (Graham, 1984).

Videoconferencing to both an on-campus group and a distant group raises several questions. Some concern distance education in general, while others relate directly to videoconferencing. Parity of outcomes for distance education and on-campus courses is still debated (Jevons, 1984; Shaw and Taylor, 1984; Dodds, Lawrence and Guiton, 1984; Smith, Daniel, and Snowden, 1984). The ability of videoconferences to effectively deliver a university education is controversial and may vary with content.

With an adapted classroom videoconference presentation questions about effects extend into the classroom itself. What impact does the technology have on both the in-class and distant groups? Is the experience different from a "normal" university classroom?

Should a face-to-face presentation be the basis for a videoconference course? Criticisms of university courses and instructors are rife. Often separate structures for distance education that by-pass "problematic" on-campus traditions have been set up. (Harrington, 1977; Holmberg, 1983; Carl, 1985). In fact, however, there has been little analysis of the traditional face-to-face presentation. Nothing was found to support the contention that face-to-face presentations are inappropriate for adaptation to distance education and videoconferencing.

What happens when an instructor addresses two similar but distinct groups simultaneously? Most distant students are mature people attending university part-time. (Holmberg, 1983). Full-time university students tend to be younger. The instructor addresses these two distinct groups simultaneously when an on-campus course, is videoconferenced.

Mature students generally perform better than younger ones (Brown, 1978; Jevons, 1984; Harrington, 1978) but what effect does technology have on the performance of mature students?

This paper compares two modes of presentation of a course: Business 200; Introduction to Accounting. It was delivered by videoconference to distant students with on-campus students in the classroom. The same professor also gave the course to an on-campus group in a "normal" classroom without videoconference.

BACKGROUND

DESCRIPTION OF DUET

Distance University Education via Television (DUET) uses one-way videoconferences to deliver courses to distant students. One-way full-motion videoconferencing combines a live television signal sent to students at distant locations with a return telephone link to the studio classroom. The television signal can be sent by land lines, micro-wave, open transmission, or satellite. DUET uses cable and direct-broadcast satellite.

The classroom presentation given to an on-campus group is delivered live to distant students. DUET courses are existing courses offered on-campus so professors teach simultaneously to students in the classroom and to distant students. Distant students participate in the class by a telephone connected through a teleconference bridge to the professor, to students in the studio classroom, and to students at other locations. Distant students complete the same requirements as on-campus students on the same schedule.

One-way full-motion videoconferencing was chosen because it enabled the university to reach distant students without investing in a separate course structure for distance education or expensive technology. By adapting a standard university classroom for videoconference it was possible to deliver instruction economically within the existing academic and administrative structures. The administration wanted individual professors to be responsible for distance education as they are for courses-on campus.

EFFECTS

It has been established that the educational effects of face-to-face and televised instruction are not significantly different (MacLennon and Reid, 1964; Mielke, 1971; Perrin, 1977) but evaluations of videoconference courses are difficult to find.

In Canada educational videoconferencing has been developed mainly for distant students (eg., Holmberg, 1983; Haughey, 1983; Catchpole, 1985; Croft, 1986). At Carleton University, Wilfred Laurier University, and the Université de Moncton, classroom presentations have been videotaped or broadcast without mechanisms for interaction with the distant students. In the United States TAGER, a consortium of universities in Texas, uses videoconferences.

There are few studies of videoconferenced courses presented to both distant and face-to-face groups. TOTE at North Carolina State University distributes videotapes to distant students whose progress is not synchronized with the on-campus calendar (Russell, 1984). Russell and Russell (1983) evaluated language teaching by videotapes of classroom presentations and found no differences in learning between those viewing the videotape and those in the classroom with the instructor during the recording. Although all receiving the videotape said they perceived the key elements of the presentation easily, more than half indicated they did not learn as much as in a classroom setting and missed not being able to ask questions. A strong majority, however, said they would take another TOTE course. Those in the classroom with the instructor during the taping said they learned as well as in a regular classroom and would take another TOTE course. Slightly over half indicated the technology improved their learning.

Kirman and Goldberg (1982) tested the effectiveness of a videoconference course in teacher education against the face-to-face course given to a control group. They found no significant difference between the performances of the groups and noted that the video group was primarily mature students while the face-to-face group was composed of younger, mainly full-time students. The video group expressed some discomfort with the technology.

Haughey (1983) examined instructor-student interactions in videoconferenced nursing and educational administration courses. These interactions were more serious, more centred on administrative matters, and more controlled than in the classroom. In a related study Collins (1983) concluded that the educational outcomes of videoconferenced and classroom courses are comparable.

Carver and McKay (1986) described the use of DUET by Dalhousie University School of Nursing. The instructor taught exclusively to distant students. Achievement was comparable to that of students on-campus.

Carl (1984) presented evaluations for DUET courses taught to both face-to-face and distant groups, noting distant students normally performed at par with or better than face-to-face groups. Some professors informally noted a trend for the average of DUET sections (i.e., distant and face-to-face combined) to be higher than for other sections they taught of the same course.

It appears videoconferencing is viable for distance courses. Most studies dealt with videoconferenced courses delivered exclusively to distant groups. The effects of videoconferencing on the on-campus group have not been compared to the situation in a normal classroom.

DISTANCE ACCOUNTING COURSES

The literature on distance education for accounting courses is sparse. Brown (1976) compared performances of distant and on-campus students taking introductory accounting from the State University of Nebraska. (Scigliano (1978) described the use of this course at Nova University.) The course differed from that described here because the package was pre-produced with a mixture of videotapes and media. The Nebraska study compared the performance of three groups: distant students taking the pre-produced course, on-campus students taking the pre-produced course, and on-campus students taking the traditional classroom course. Distant students were allowed to take the course at their own pace while on-campus students were required to adhere to academic timetables.

Brown concluded that the distant learners who completed the course did as well or better than the on-campus learners using the same materials. Performance for both groups and those in the normal classroom was comparable. He also noted that mature learners performed better than younger students.

The present study differs in several respects. Business 220 was a full year, one unit, introductory accounting course. The same course content and format was used to teach all students. The independent variable was the technology. In the traditional classroom normal technology was employed (chalkboard and overhead projector). In the DUET classroom (DUET in-class group) the presentation was the same except that visuals normally viewed as overheads were on the television screens. Students in both groups participated in face-to-face exchanges with the professor. Distant students received the classroom presentation and all visuals through television. They participated using a telephone linked to the DUET classroom. All class materials, assignments and examintions were the same for both the DUET and normal classroom sections. All students had to meet the same deadlines for assignments, examinations and the course itself. Introductory Accounting was a compulsory course for all Business Administration and Office Administration programmes at Mount Saint Vincent University. The DUET in-class group and the normal classroom group consisted of approximately equal numbers of Business Administration and Office Administration students. The other on-campus students took the course as an elective (one in the DUET in-class group, two in the normal classroom). All distant students were in the Business Administration Programme.

On the basis of the results obtained by Brown (1976), the following hypotheses were generated.

HYPOTHESES

1. There will be no significant differences in performance on assignments, tests, and final grades between the DUET group and the section taught in the DUET classroom.
2. There will be no significant difference in performance on assignments, tests, and final grades between the DUET group and the normal classroom group.
3. There will be no difference in performance on assignments, tests, and final grades between students in the DUET classroom and in the normal classroom.
4. There will be no difference in the performance of mature on-campus students and mature students taking the distance course.

METHOD

Two sections of the course were offered by the same professor. The students self-selected themselves into each section: the DUET section as either a distant or an in-class student; or the normal classroom section. The sessions were taught on the same day, the DUET section in the morning, the normal classroom section in the afternoon. All assignments and tests were administered at the same time. Midterm and final exams were administered to both groups simultaneously in a common test sitting.

The section which met in the DUET classroom received a face-to-face presentation augmented with visuals on television screens placed around the classroom. Distant students were heard over speakers.

Distant students received the same class simultaneously by television, viewing both presentation and visuals on the television screen. A telephone next to the television gave students a link into the originating classroom.

Students in the normal classroom received a normal on-campus class. Visual material was presented using an overhead projector and the chalkboard.

There were 26 DUET in-class students; 11 distant students; and 32 in the normal classroom. There were no mature students in the normal on-campus classroom, three in the DUET classroom and all 11 distant students were mature.

Each group was compared to the others using an ANOVA for unequal n's. The same procedure was used to compare the performance of mature students on-campus with that of mature distant students.

Student performance was compared on eight measures: first semester assignments, first midterm examination, Christmas examination, Christmas mark for the course, second semester assignments, second midterm examination, final examination, and final mark for the course.

RESULTS

The results revealed significant differences between the performance of the DUET distant student population and both the on-campus DUET group and on-campus normal group. There were no differences between the performances of mature students on-campus and of mature distant students. The magnitude of the differences were greater during the first semester than they were during the second semester.

On the first mid-term exam distant students did significantly better than the on-campus DUET group at the .05 level. Comparison of the distant student performance with that of the group in the normal classroom yielded a slightly higher significance level, .001. There was no difference between the performance of the distant student population and that of the on-campus mature population.

The same results were obtained for first semester assignments. Comparison on the Christmas mark yielded similar results.

Comparison on the Christmas examination revealed a significant difference in the performance of the distant student group with that of both the DUET on-campus section and the normal section at the

.001 level. Again, no differences were found between the performance of mature on-campus and mature distant students.

Magnitudes of difference were noticeably smaller for the second semester work. Performance on assignments revealed no difference between distant students and on-campus DUET students nor between on-campus DUET and the on-campus normal section. Comparison of the performances of distant students with the on-campus normal showed a tendency towards significance at the .25 level. No differences were evident between the two mature student groups.

On the second midterm examination, the distant student group performed better than the on-campus DUET section at the .01 level, and better than the on-campus normal group at the .025 level. Again no differences were found between the two on-campus groups nor for the mature student groups.

On the final examination the distant student group performed better than the normal on-campus group at the .01 level but only tended towards significance (.25) in a comparison with the on-campus DUET section. Again, no differences between the mature on-campus students and distant students were evident.

The final grade revealed significant differences between the distant student population and the DUET on-campus (.05) and the normal on-campus (.025). There were no differences between the on-campus groups nor for the comparison of the mature distant and mature on-campus students.

Tables 1 and 2 summarize the comparisons. In total, there were no differences across the measures between the performances of DUET on-campus and on-campus normal classroom. There were no differences evident in the performances of mature on-campus and mature distant students. There were significant differences found between the performances of distant students and the performances of on-campus DUET and that of on-campus normal on most measures. Distant students performed better than their on-campus counterparts and as well as the mature students in the on-campus version of the course.

Confidence levels were higher for comparisons of distant students with the on-campus normal classroom group than they were for comparisons of distant students with the DUET classroom group. Since the only on-campus mature students in the comparison were in this section, the differences may be attributable to the effect of the mature students on the overall performance of that group.

DISCUSSION

Distant students obtained significantly higher grades than on-campus students. There were few mature on-campus students, so it is difficult to assert that the performance of the on-campus mature group is comparable to that of the distant students. This might be so. There was no significant difference in performance between the DUET in-class group and the regular classroom group. These two findings suggest that technology has no differential effect on learning. Both traditional and mature students performed the same regardless of the treatment.

Levels of significance are slightly higher for the first term than for the second. This may indicate a Hawthorne Effect. P levels did remain high during the second semester which may give a better estimate of the differences between the groups.

Levels of significance are also slightly higher for the distant student/normal class comparison than for the distant student/DUET on-campus comparison. This may be due to the three mature students in the DUET on-campus section. No mature students were enrolled in the normal classroom section. As the performance of the distant student group appears comparable to that of the mature student group, the performance of mature students looks to be the basis of this trend. Significant differences were found between DUET in-class and normal classroom so mature students may explain the discrepancy in levels of significance.

The study shows that with the same course materials and videoconferencing, distant students can be expected to perform better than on-campus traditional students and perhaps as well as mature on-campus students. It would appear that the credit courses developed for on-campus can be effectively transmitted by videoconference for mature distant students.

Videoconferencing did not affect adversely the performance of the DUET on-campus group, so videoconferencing is viable for teaching distant and on-campus students simultaneously. The professor has on-campus students in the classroom to provide feedback and other important non-verbal cues.

This poses the question whether special materials need to be developed for distant students. Here materials and presentation were slightly modified for delivery using live video but no special materials were generated.

Performance measures were analyzed but attitudes toward the courses were not studied.

"Piggybacking" a distance course on one developed for on-campus delivery is attractive for universities with few resources. Existing structures can be used to enable professors to teach more students. Integration of distance education with on-campus teaching avoids problems associated with a separate distance course structure.

TABLE 1 SUMMARY OF SIGNIFICANCE LEVELS ON PERFORMANCE MEASURES FIRST SEMESTER

	midterm exam	Christmas exam	First term assignments	Christmas mark
distant/DUET in-class	.005	.001	.005	.005
distance/ normal in-class	.001	.001	.001	.001
DUETin-class normal in-class	NSD	NSD	NSD	NSD
distant/on-campus mature	NSD	NSD	NSD	NSD

TABLE 2 SUMMARY OF SIGNIFICANCE LEVELS ON PERFORMANCE MEASURES SECOND SEMESTER

	midterm exam 2	Final exam	Second term assignments	Final grade
distant/DUET in-class	.01	.25	NSD	.05
distance/ normal in-class	.025	.01	.25	.025
DUETin-class normal in-class	NSD	NSD	NSD	NSD
distant/on-campus mature	NSD	NSD	NSD	NSD

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The educational challenge of optical storage technology

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THE COMING OF THE CD-ROM

In the last two years, a small silver platter called the CD-ROM (Compact disk, read-only medium) which uses optical storage technology, has made inroads into academic libraries, art galleries and museums. This small disk measuring only 12.5 centimetres, and made from heavily coated polycarbonate plastic which renders it extremely hardy, is capable of holding information equivalent to the contents of 1,500 floppy disks, or 500 average sized books or the equivalent 250,000 pages. It is now possible to have the entire Grolier Encyclopaedia or the ERIC education database on a CD-ROM for searching and reading on a microcomputer at home or in one's office. The latest from the United Kingdom open learning community is that the videotext-based national course directory ECCTIS has been put on a CD-ROM disk to enable people to search the course titles in a more effective way (that is, quicker searching capabilities without incurring telecommunications costs). The cost of CD-ROM, now around A$500 each, is expected to drop to about a tenth of this price in a few years time.

Compact disks, currently thought of as only a storage device of catalogues, directories, library-related type of databases, will exert a very visible influence on computing and education in the next five years. We shall have a very powerful tool for introducing computer-assisted learning on a big scale.

While most of us are still deliberating whether we should get a Macintosh or an IBM as our teaching or learning aid, the systems people are already talking about backing up computer centre disks not with big spools of magnetic tapes, but with a type of compact disk called WORM (Warren 1987). So in a few years' time, we can expect to see less of the now familiar floppy disks but may actually be using a shiny silver disk for our daily computing. New developments in optical storage will also make compact disk erasable and hence re-usable, enabling us to put voice, text and graphics, and motion on the same disk which can be controlled by some programs built into the computer system that plays the disk.

Optical storage technology and related terms like CD-ROM, WORM, CD-I, DVI are obviously things about which we shall hear more. What follows is a layman's overview of this powerful new medium of teaching and learning.

A BRIEF INTRODUCTION OF OPTICAL STORAGE

Optical storage technology uses finely focused laser beams to cram at least 50 times more data onto a given number of square centimetres on a chosen surface which is usually a polycarbonate plastic disk, called a compact disk. CD or compact disk is therefore a generic term that refers to any digital storage technology that uses 12.5 centimetre optical disks.

Data stored on CD can be output as sound, text and graphics or motion. The last is not yet available on the market at the time of writing. This is because producing digital-based video is a complex process that requires a large amount of data which CD-ROM disks cannot adequately handle at this stage.

When a standard screen of analog video measuring 512 by 400 pixels is converted into digital form, the information takes about 600 kilobytes of data per image per frame. CD-ROM capacity is huge but is still not sufficient for that purpose. Also, CD-ROM reads data out at a rate of 150 kilobytes per second, it is not fast enough to show video at its real-time speed. CD-ROM will take more than one hour to show 30 seconds of digital video. In television, about 30 frames of video must be displayed each second in order to portray full-motion effects.

A breakthrough announced by the General Electric Company's RCA Laboratories, Princeton, New Jersey in March 1987 is going to change all that for optical storage technology, making it more even more powerful. RCA has introduced a new technology known as digital video interactive (or DVI), which can put one whole hour of motion on a CD-ROM disk. The secret is using a very large-scale integration (VLSI) chip set to compress data on a CD-ROM disk (to make it hold even more) and then decompress it for display resulting in real-time video.

DVI technology combines the interactivity of the graphics capabilities in personal computers with the realism of high-quality motion video and multitrack audio in an all-digital integrated system. Because of its varied and flexible display and sound capabilities, DVI will create new opportunities for application developers in the area of real simulations, education, training, video paint, animation, editing and special effects.

THREE CLASSES OF OPTICAL STORAGE MEDIA

We shall now look at the production and use of the CD. Optical storage can be broadly classified into three types or three stages of development.

The first class is the read-only optical media. The product of the last decade in this class is the 30 cm big videodisk, which to all intents and purposes is on the way out even though some of us have only seen it briefly at demonstrations. It failed to make an impact on the commercial or home market. Now, in its wake comes the smaller 12.5 cm silver platter which goes by the name of CD-ROM. Industry prediction is that this will have a place in the home because people have already taken to the music compact disks and finding them increasingly preferable to the old gramophone record or the audio cassette.

The second class is the write-once disk, which has just started to appear on the market, and is produced by a small number of Japanese and American firms for specific applications or as part of a dedicated package. With this type of medium, a user can write information onto the disk and then read it. Because the information makes a physical change on the surface of the disk, like the permanent grooves on a phonograph record, it cannot be altered although it can be read as many times as possible, hence such disks are called WORM (Write Once, Read Mostly) disks.

The third class is the erasable optical storage. This is still being developed in laboratories in Europe, Japan and America. It means that you can erase a disk section by section, or an entire disk and put in new information. The concept is similar to that of copying and deleting files on a floppy and re-using the space.

The above have great cost and production implications for education. Some educators believe that CD will only take off and become a viable teaching and learning medium when disks can be erased, re-used, and played on a system that is widely available to both the teacher and the student at a reasonable cost.

READING A CD-ROM DISK

Currently you need a special drive and a microcomputer system (with a monitor) to read and display the data. The drive can be external or within the microcomputer.

In today's terms of hardware, the minimum set-up cost is about A$5000 per system. Apart from the CD-ROM disk, the basic units required are:

• One microcomputer system	$3500
• One CD-ROM drive internal/external	$1500/1700

The requirement of a microcomputer system is:

- 512K Random Access Memory
- a hard disk
- a colour graphics adaptor (CGA) or an enhanced graphics adaptor (EGA)
- a colour monitor or a monochrome one if colour is considered unimportant
- a colour inkjet printer or a black and white printer

THE CD MARKET

Currently CD-ROM technology is used primarily by electronic publishers and large database operators. They are largely databases of bibliographical or statistical data and mostly originate from the United States in a wide range of subjects.

Most CD-ROM disks run on microcomputers, mainframes, miniframes, workstations using the MS-DOS, or VMS or UNIX operating systems. Most disk vendors offer customers a few configurations of support services. For example, ERIC, the education database, can offer the database indexes and search software, documentation and telephone guidance and updates.

The following* is the approximate production costs from a Melbourne agent of a Japanese CD-ROM manufacturing firm, charged on a wholesale basis with the client supplying correctly-formatted master magnetic tapes containing the information to be put on disk.

WORM disks are now on the specialist market but they generally hold less data (200 megabytes) because they do not pack the data as closely as CD-ROM. Their main drawback is that they have no standards currently. Disks manufactured by different companies are not the same size and their plastic protective shells are not the same shape.

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Data volume	100 Mb	200 Mb	300 Mb	400 Mb	500 Mb
500 disks	$35 each	$39 each	$44 each	$48 each	$55 each
1000 disks	$25 each	$28 each	$30 each	$33 each	$36 each

CD-ROM presumes the presence of a computer. But a new product that might reach the market in 1988 is something called the CD-I, or Compact Disk Interactive. This is a product design proposed by Sony and Philips and the concept was introduced officially in February 1986. It will be marketed as an enhanced CD record player. It has a compact disk reader, a 68000 microprocessor running under the OS-9 operating system and a simple device like a mouse or a joystick. CD-I is designed to be a mass-market consumer product that does not require a computer to access the data on the compact disk. It is aimed at the home consumer who is not a computer programmer or a serious computer user.

People supporting the CD-I predict that it will be popular and will be bought for use as both an interactive viewer and an alternative audio entertainment source at home. But others think that CD-ROM (expected to be strengthened by DVI) has more future as the price of microcomputers drop. So far, this camp appears to be gaining grounds as the manufacturer of CD-I does not seem to be able to keep its promise of delivering the system to American and Japanese stores by Christmas in 1987. The obscure OS-9 operating system used for CD-I also means that it cannot be used with the huge number of software applications compatible with the IBM PC or any other popular microcomputers which are being used for the existing CD-ROM disks and CD drives — an important consideration in the rapidly expanding work-at-home market for the more technically-oriented consumers.

DVI promises to be a stiff competitor for CD-I. Its arrival has sent the whole optical storage technical community into a state of excitement and the CD producers into one of uncertainty. RCA is reported to be planning to release a DVI development kit for the IBM PC AT, compatibles and newer microcomputers and workstations popular with the business community; if so, this will speed the development of DVI-based applications.

There are now pressure and official groups already pushing for industry standards for compact disks, e.g. the High Sierra Group in North America, Sony and Philips, with poweful software houses like Microsoft having a very important say in the development of standards.

EDUCATIONAL CHALLENGE

The above is a rather technical overview of the history and future of optical technology. What is coming is a powerful product that will integrate sound, motion, graphics and text, which can be mailed to a student by post without fear of damage, and which can then be played on a microcomputer. Are we ready for it? Are our students ready for it?

We will be confronted with the same kind of educational considerations as in the choice of media for our educational delivery. Bates (1984) in a workshop on the old videodisk at the Open University, asked these questions:

1 Overall objectives: what do you want to teach; how do you want to teach it (e.g. didactic or discovery); and to whom do you want to teach it?
2 Accessibility: how accessible is the medium for both teacher and learner; how can the teacher get learning material to the learner, how easy is it for the teacher to use and design such a medium, will the learner be able to access easily such material and where will the learner use it — home, a centre, summer school?
3 Teaching functions: what special educational roles will each medium play; and what can the chosen medium do better than the other media?
4 Ease of production: how much time does it take for the teacher to design or produce materials in this medium; how much professional help will the teacher need; how easy will it be for the teacher to design the material himself or herself, or will it require a team effort?
5 Costs: how much does it cost to design and produce one hour's teaching material; how much does it cost to deliver; what does it cost the student, in terms of equipment, travelling or other costs?
6 Learner's control: how easy is it for the learner to control the medium; does the medium allow for interaction and feedback; is it a "friendly" medium — will it be easy for the learner to use?

These questions, which must also be looked at in the case of compact disk, are particularly difficult to consider currently as there are no institutions yet using compact disks for teaching, and we do not yet know enough about the final product of CD-I or DVI and the consumer acceptance of such a product. Will it be a source of confusion if the student has not been adequately prepared for learning by that mode (Laurillard, 1984)? Also, consumer acceptance does not guarantee that we, as educators, will necessarily use CD for teaching our students. If most teachers will only use print (and not use it well, in the view of many instructional designers), and have ignored the humble telephone, radio, audiotape, videotape, films, photos, will they use CD (Hutton 1984)?

But I suspect that optical storage offers advantages and opportunities which big teaching institutions in the developed countries will find hard to ignore. A university, for example, can put all its course material (whether its is print, video, or audio), or may be even its library catalogue and recommended readings, on one disk. While the upfront costs of preparing the material for the master tape are high, once it is done, the replication costs for vast numbers of copies are exceptionally cheap. Our institutions may force us to think of using optical storage medium for teaching, even if the reason behind the pressure is more economic than educational.

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Student response to a distance education course incorporating live, interactive television

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An analysis of the use of television in distance education reveals three distinct phases. Initially, as Munshi (1980) has reported, "Traditional television courses have presented a lecturer, supported by a blackboard, artifacts and, perhaps, slides. The teachers on such 'television courses' essentially brought their classroom to the television studio. They delivered a talk and supported it, by and large, with reading assignments in their favourite texts" (p. 3). Such tele-lectures were not entirely ineffective but, as open learning/distance education methodology advanced, they began to give way to the more elaborate, pre-recorded telecourse.

Telecourses, the second phase in the use of television to reach students at a distance, are produced in consultation with subject experts and may include the latter in "bit parts" but often prefer to use professional television hosts. While some telecourses use the television as the primary vehicle for course content delivery, most form part of an integrated multimedia delivery system including print (text, study guide, and additional readings) and perhaps other media (e.g. floppy disk, audio cassette). Ostman and Wagner (1987) among others have emphasized the value of using multiple communication channels to reach students. Since telecourses are reusable, and often widely marketable, they can be assigned substantial production budgets.

Studies of the effectiveness of telecourses (e.g. Schramm 1977) have shown positive results. Shavelson, Webb and Hotta (1987) recently concluded that "...students will learn about as much from a telecourse as from a traditional course" (p. 29).

The third, and most recent, use of television in distance education involves using live television and having audio linkage between teacher and student. Whittington (1987) says "Live, interactive televised instruction is that which is offered via satellite or microwave delivery systems in real time to students who have immediate talk-back capability with the instructor" (p. 47). He goes on to cite several studies done with students at Stanford, Minot State College and California State (Chico) which gave positive evaluations of live, interactive television. Catchpole and MacGregor (1984) report positive student feedback to a distance education course incorporating print (text, study guide and student manual), telephone tutor, pre-recorded telecourse and live, interactive television components. Persons and Catchpole (1987) report completion rates (counting only those students who submitted the first assignment) of ninety-percent in a live, interactive television course and observed, in an experimental manipulation, that the addition of audio-teleconferences for half of registrants did not significantly boost completion rates. They concluded that the interaction provided by phone-in segments of live, interactive telecasts already met the interaction needs which audio-teleconferences can provide.

Reasons for the success of live, interactive television are inferential at best. Catchpole (1986) has stressed that, since interactive television courses use regular instructors, adequate training in the move from classroom to television studio is critical. The notion of enhanced communication (e.g. Keegan, 1980; Daniel and Marquis, 1980; and Holmberg, 1985) may prove to be another significant factor. Shale (1987) has noted that "...as various technologies evolve to a point where they support better two-way communication and allow students to interact in the instructional process, they will come to occupy a more central role." (p. 21) In order to gather further data as to salient features of multi-modal distance education courses incorporating live, interactive television the following study was undertaken. As Bates (1981) and Prosser (1984) have argued, case studies are valid at this phase in the evolution of distance education and are critical for pin-pointing key variables for study using more rigorous experimental or quasi-experimental techniques.

METHOD

Subjects The subjects were 92 respondents to a questionnaire mailed to 138 students who enrolled at home in an Introductory Psychology televised

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course. They came from 55 communities in British Columbia, Alberta and the Yukon. Students who enrolled from the North Island College region (approximately four percent of the Knowledge Network television coverage area) were not included in the study since the college provides additional services (local learning centres and tutors) not available to the other 138 registrants. Kember and Dekkers (1987) have recently addressed this local study centre issue.

Materials and Procedure Students enrolled in the course after watching a live introductory preview/registration telecast (calling in if they had questions) and mailing in the course fee. They were mailed a print package containing text, study guide, student manual and pacing schedule. Each week they could tune into the telecasts which alternated between live instructor-hosted presentations incorporating lecture, guest interview and phone-in segments and, on alternate weeks, instructor-hosted pre-recorded, in-depth interviews with guest experts. In addition to tollfree telephone access during the telecasts students could call their instructor/tutor toll-free at his office at any time during the sixteen week course. Students also were advised to watch the series Understanding Human Behavior. These 30 minute tapes were played on Knowledge Network at the rate of one per week and covered text material. The tapes are produced by Coastline Community College in California and utilize high production values.

The questionnaire was mailed to students with a stamped addressed envelope. Included with the questionnaire was a letter from the instructor/tutor encouraging students to return the questionnaire as quickly as possible and thanking them for their participation. Questionnaire were mailed out four weeks after the final telecast (i.e. 20 weeks after registration).

RESULTS AND DISCUSSION

A number of interesting fact emerged. Firstly, a majority of students (52%) enrolled for general interest rather than credit and a further 19 percent switching from credit to general interest. This high rate of general interest registrations is interesting since distance education courses not incorporating live-interactive television attract very few non-credit enrollments. Clearly the big plus here (bolstered by Nielsen survey data indicating that a further 15,000 to 18,000 people turned in to the weekly telecasts without registrering) is that the addition of television attracted many more students than print plus telephone alone. Several credit registrants, at the time of registration, indicated they had followed the programs the previous year and were now going to try the course for credit. Self-improvement was the most popular reason for enrolling. Only 19% of students cited "University transfer" as their primary reason for enrolling.

59% of students thought they would be unable to take a similar course locally without the Knowledge Network. In fact, British Columbia's Open Learning Institute offers a very similar course via a print plus telephone tutor delivery system anywhere in the province but it seems the majority of registrants were unaware of this option. The relatively higher profile of television may have been a factor. Those who responded that a similar course *was* available locally gave various reasons for taking the course via television such as Travel and childcare problems as well as convenience and lesser expense.

Strategies used to advertise the course included posters sent to all 14 regional colleges in B.C. and a 60 second instructor-hosted, promotional spot which ran roughly twice a day on the Knowledge Network for three weeks before the first class. Results showed the Knowledge Network ad to be the most effective.

74% watched ten or more telecasts. 33% video-taped four or more telecasts and 18% audio-taped the telecasts. Increasing availability of VCR's will presumably increase the number of students who video-tape teleclasses.

47% of students had a friend, not registered in the course, who also watched some of the telecasts. The signal quality was rated as "Same", "Better" or "Much Better" than other channels by 97% of respondents. Over 95% of respondents also watched other Knowledge Network programming.

Five questions were designed to assess students' reactions to the phone-in portion of the telecasts as well as reaction to toll-free telephone contact with the instructor/tutor at his office. 40% felt the live phone-in segment was not important to course completion and 59% felt it was. 42% did try to call in one or more times on-air and 20% were successful. This was probably because any viewer (registrant or not) could phone in to the live discussion groups. Those students who didn't phone felt "too nervous" while others mentioned that they "enjoyed hearing comments form other students". If, as other distance educators (e.g. Holmberg, 1985) have suggested, isolation is a problem for some distance learners the chance to hear one's classmates and make comparisons may have been a key asset of the phone-in. Students varied in their enjoyment of the phone-in discussion groups. 43% said they enjoyed the phone-in "Much" or "Very Much", 19% said "Little" and 36% said "Average". Positive comments included "classroom atmosphere breaks down isolation" and "good to see how others were reacting to the course" while a negative comment was "time could have been better spent on interviews and instruction". Perhaps individual differences in Murray's concept of "need for affiliation" (see Persons and Catchpole, 1987) play a role here. Particularly interesting was a student who "didn't phone, but my questions were asked and answered".

Overall course design was rated "Excellent" or "Good" by 91% of respondents. The printed materials (text, study guide, student manual and pacing schedule) were rated "Good" or "Excellent" by 92% of respondents. The Coast Community College "Understanding Human Behavior" tapes were given these same two ratings by 76%. The live classes were rated "Good" or "Excellent" by 93% and the instructor-hosted pre-recorded interviews by 87%. When asked to rank the various course components the live classes were rated most useful to learning (48%) with the text second (36%), instructor-hosted pre-recorded interviews third (10%) followed by the Understanding Human Behavior tapes (6%). In light of the very low production costs of the instructor-hosted live and pre-recorded programs (especially in comparison with the very high budget and elaborate Understanding Human Behavior tapes) it would appear that instructor/student contact was preceived as much more important to learning than an elaborate and expensive video presentation. In this regard, responses indicated that were all course components available (print package, telephone access to tutor and Understanding Human Behavior videotapes), except the weekly instructor-hosted programs, 90% of students reported they would have *learned* "Not as Much" or "Not Nearly as Much" while when asked how they would have *enjoyed* the course 95% said "Not as Much" or "Not Nearly as Much".

CONCLUSIONS

Positive student feedback to an integrated distance education course incorporating live-interactive television indicates that, if feasible, it is worth adding as a course component. Reduced feelings of isolation, more pleasure in taking a home-study course and enhancement of the personal relationship between student and instructor/tutor are among the benefits of a live television course component. The results indicate that this enhancement of the student — instructor/tutor relationship is a more important motivational and learning factor than elaborate television production.

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A cognitive approach to the design of distance education materials

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THE NATURE OF THE PROBLEM

In distance education we are usually concerned with indirect methods of interacting the learners, mostly using the written word. During the decades of the sixties and seventies, most of the existing distance education programs at the postsecondary level intended to solve the problem of inducing effective learning by using the behavioristic recipes, such as: defining objectives in terms of conduct, breaking down the tasks, setting specific achievement criteria, reinforcing after each unit of practice and so forth. These devices are considered by Macdonald-Ross (1979) to be the "cultural descendants" of programmed learning; they have been found extremely restrictive when applied to complex learning. Our aim in this paper is, then, to review some recent contributions of cognitive psychology that can provide alternative insights to the elaboration of instructional materials.

To start with, we will assume that distance learners — in order to be successful — require certain predispositions such as: fairly high level of reading ability, high motivation to read and capacity to organize independent study projects. However, it is known that many students lack a proper development of these characteristics.

In view of this problem it becomes necessary to design the distance education texts to stimulate the student's reading skills. Every aspect of the reading material must be considered: the sequence of presentation, the style in which it is written, the organization of content, the aids given to students for improving comprehension, the clarity of layout of the printed page and so forth. There are divided opinions about how much "design" must be put into a text in order to help the student and how much must be left to his or her individual effort. Some practitioners of distance education think that the student should receive basically standard textbooks plus some sort of study guide, indicating the parts of the texts to be read and the purposes of reading. In our view this treatment is unfair to distant learners, because they have less opportunities for receiving orientation from instructors or peers.

COGNITIVE RESEARCH AND THE DESIGN OF TEXT

The main tasks we have set for ourselves in this paper is to examine research evidence on techniques that facilitate learning from text, and to derive guidelines for text design from that evidence. The subject of the discussion will be divided according to the main areas of inquiry in this context.

(1) PREPARATION OF THE LEARNER

One point of agreement between the old tradition of memory research and cognitive theorists is that the *recall of prior knowledge* (Gagne, 1978) improves comprehension and further recall. Schallert (1982) would call this process activation of existing schemas. Ways of invoking previous knowledge in a distance text may be pre-test questions, summaries of theories or facts that are necessary to understand the current reading, and rapid reviews of concepts studied up to that point. A caveat in respect to prior knowledge is that, as pointed out by Schallert, old structures may hinder a full understanding of new information.

(2) LANGUAGE TREATMENT

Knowledge of the vocabulary being used in the text is an important factor for comprehension of the reading material. In this respect, Stahl (1983) has shown that vocabulary instruction given prior to reading enhanced comprehension in students. This does not necessarily mean that every reading unit should be preceded by a list of definitions of the key terms. A better way of doing it can be to explain the meaning of key terms and their relationships in the unit introduction. This can help especially the slow learner who is unable to infer the meaning of certain key concepts just by reading the text.

Other studies have been carried out on the uses of *verbal redundancy* in the text. In other words, expressing the same concept with different propositions, use of summary paragraphs and repetition of key ideas (Gagne, 1978). In general, redundancy is recommended to help students understand the ideas contained in the text, but it should not be so frequently used that the text becomes dull. It may be advisable, for instance, to use high redundancy in the initial units of a text — when the learner is not yet proficient in handling the new concepts — and then gradually reduce redundancy as the text goes on. It should be remembered that redundancy is partially a function of the preparation of the reader, the more he or she knows about something the more redundant additional readings on the same topic will be.

In a different order of language treatment, we may quote McConkie's (1977) *staging devices,* meaning ways of differentiating two or more levels of importance in the text. One common staging method is to put the central idea of a paragraph at the beginning. More subtle forms can be thought of: to group all the sentences referring to attributes of an object in a paragraph, to use adjectives or phrases that denote importance when speaking about the point that has to be "staged", and some others. There is good evidence that all these elements improve retention too (Riche and Slater, 1983).

(3) MATHEMAGENIC AIDS

Mathemagenic aids, a term coined by Rothkopff (1982) means a series of devices used to activate thought processes with the purpose of enhancing learning. These include adjunct aids, questions, verbal directions, task demands and other elements that apparently have the same "mathemagenic" function.

In the first place, there is widespread evidence that the use of *advance organizers* (Ausubel and Robinson, 1969:316) is a powerful tool for comprehension. The term describes deliberately structured sets of ideas presented to learners prior to the material to be learned. They provide a conceptual framework that facilitates comprehension and retention by making available an organization of old familiar ideas to which the new ideas can be related or anchored. In general, there are two kinds of advance organizers: *expository,* recommended when the material is completely new to the students, and *comparative,* recommended when the material is not completely new. Examples of expository organizers would be: a conceptual map of the reading unit, a well-structured example of the principles to be discussed and an overview of the text put in simple language. Among comparative organizers, we can quote analogies, models brought from different fields to the area of study and comparisons.

Similar to advance organizers are *reviews* (Marland and Store, 1982:81), but they differ from the former in the level of condensation of content. Reviews are written like a precis of the subsequent material. Their main purpose is to familiarize students with the scope and structural features of the material to be presented. They allow students to "access the structure" of the chapter or book without reading the whole material. Reviews, in order to be effective, require a trained reader and one who has certain familiarity with the material.

The use of *adjunct aids* has been investigated by Rothkopff (1982:115–16) in conventional instruction settings. He uses the term to identify any additional element of information — such as a dictionary, a map, a handout — that is introduced by the instructor in the reading situation to enhance the effectiveness of learning. In distance education, we cannot rely on this flexibility of the teacher for presenting additional materials, but we can think of adjunct aids as incorporated into the learning package that is delivered to the student. Some elements that can be used in this way are the following: glossary of important terms, list of cases or problems for application of the theory under study, short reading on a relevant topic but not related to the main purpose of the unit.

A special case of adjunct aids are *adjunct questions* (Rothkopff, 1982: 127–9), which are conceived as highly abstract questions introduced during the process of reading in order to strengthen the recall of important information and influence mathemagenic or reflective processes. They intend to make the reader "work" intellectually on the material and increase the number of useful conceptual associations being activated by reading. One problem of applying this technique in distance education is that the student may skip the questions or just read them but not intend an answer because they are too long. However, this can be remedied by establishing a policy that some questions of the official exams are related to the adjunct questions in the texts. Further, adjunct questions can be seen as tools to manipulate the disparity between the current understanding of concepts and principles by the student and the desired understanding. Each question evidences aspects of disparity and urges the student to look for more relevant information in the text or outside; in other words, the questions encourage active participation by the students.

Cognitive research has provided a new view of *learning objectives* that attaches to them a new meaning in contrast with the behavioristic tradition. Instead of assuming that all students are able to use descriptions of objectives to match them with learning outcomes, authors Rothkopff (1982:122–6) and Marland and Store (1983:84–8) have inquired what the students do with objectives in natural settings. Their results are problematic, but at least the following points became clear: (1) students use objectives as selection devices to read information — sometimes incidental — that has some resemblance with the objectives; (2) the effectiveness of objectives as selectors is inversely proportional to their number; (3) the effectiveness is related too to the relative closeness of the objective to the relevant material in the text; (4) objectives are pathways to the structure of the text, when they are used as categories to divide the reading material.

Finally, a powerful technique of eliciting mathemagenic processes is the use of *task demands or task structures* (Rothkopff, 1982:120–2; McConkie, 1977:32–3). They are verbal requests made of the student to do something with the reading information. Examples of task demands in higher education would be case studies, complex exercises, and instructions for doing summaries or comparison of theories. According to Rothkopff, these devices generate *deep processing* or interpretive responses. We can state, as a guideline for distance text designers, that they have to dedicate certain parts of the text to present complex, integrative tasks, suitable to elicit the student's utilization of a variety of concepts and facts to generate a new personal product.

(4) METACOGNITIONS

To what extent can knowledge of the reading processes and strategies, by itself, improve the effectiveness of the reader? If readers can be made aware of how their memory operates, how they make inferences, how their attention determines what they get from the text, can they then become better readers? The answer of the experimental research is yes (Andersson and Armbuster, 1982). However, it is difficult to introduce this kind of aspect into the instructional text by itself, because it would be seen as foreign material.

As an alternative solution, many distance education programs introduce specific courses on reading or study skills, but they are not as effective as expected, because they are separated from the mainstream programs of the institution. It seems that more creative solutions have to be sought.

We think that a feasible solution in a distance education system would be to have a series of tasks included in the regular textbooks, with the purpose of evaluating the processes used to learn. Questions would be addressed to such topics as what kind of outlines of the structure were made by the student?; what aspects of the text generated more reflection?; what passages were easier or more difficult? The student would review these questions in order to diagnose potential or actual difficulties and then stress the practice of those reading techniques that can be more useful.

CONCLUSIONS

The techniques that have been reviewed present a complex and challenging picture of the problem of designing text that was not envisioned two decades ago. In spite of that complexity, we can abstract some dimensions underlying the cognitive techniques. They are the following:

- amount of control over the learner
- activation of relationships
- level of text structure being processed.

The amount of control over the learner is given by the restrictions that the technique imposes over the decisions made by the reader. There are highly obtrusive techniques such as staging devices, advance organizers, reviews and lists of objectives; less obtrusive techniques are task demands and adjunct questions. The last group gives more room for personal organization of the material. A process of teaching adults at-a-distance might start by using highly controlled techniques in the initial stages of each program but then progressively substituting them by less obtrusive forms as the learner becomes more competent.

Activation of relationships refers to the amount of significant connections in the learner's cognitive structure that are elicited by the instructional device. There is low activation in vocabulary reviews, redundance and staging techniques, but high activation in reviews, adjunct questions and task structures. The preference of techniques depends on the course content and the familiarity of the student with such content. If the student does not have fairly good familiarity, he or she would not be able to meet the criteria of a technique that demands a lot of linkages between concepts.

Level of text structure being processed refers to whether the student grasps the surface structure of the text (passages), or the knowledge or deep structure. Techniques such as redundancy, staging devices and learning objectives are pathways of the surface structure; while other techniques that emphasize deep processing permit to access the knowledge structure.

This set of dimensions applicable to the reading aids can be used to provoke further research on the effectiveness of several devices and the impact that variations of each dimension have in the cognitive and related affective processes of the adult reader.

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Creating the National Open University in Taiwan: the influence of cultural and educational factors

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After five years of discussion and exploratory work, the National Open University (NOU) in Taiwan, the Republic of China, was founded in 1986, amid growing interest in many parts of the world in providing broader access to higher education for various segments of the adult population. The time it took to create this new institution is not particularly long when compared with Taiwan's Asian neighbours such as Japan and Korea in their efforts to do the same. But the timing is perhaps of interest to those involved in distance education at the university level. Why, we may ask, has Taiwan lagged behind not only many of the newly industrialised societies but also quite a few developing ones in pursuing this kind of education innovation? What are the features uncommonly found among distance teaching institutions elsewhere? Finally, and not the least, what is NOU's future? Will the NOU get established?

CULTURAL AND EDUCATIONAL BACKGROUND

The pattern of the project finally adopted for NOU is of course based on Taiwan's cultural and education milieu. The Chinese tradition of according prime importance to schooling as an ideal way of preparing for adulthood is rooted deeply in the mind of most people here on the island known as Formosa. It is believed that this is part of Confucian heritage. For better or worse, this tradition has been transformed into an ever increasing zeal in competing for school entrance in general, and in struggling towards a university degree in particular. This does not necessarily mean that there is a scarcity of educational opportunity or a squeeze in the number of school entrants. In fact, the proportion of school-aged children going into elementary schools is near 100 per cent at the beginning of the nine-year compulsory education, and the literacy rate is one of the highest in the world. The proportion of adults with a college diploma or university degree is around 10 per cent, lower than that in the United States and Japan but higher than that in most Western European countries.

The effect of Confucianism has been reinforced by high population density and lack of natural resources in Taiwan, which are regarded as negative aspects in the development of the country's economy. Therefore, higher education and/or better training, and consequently higher productivity, seem to be the only solution. Still, no one is quite sure whether it is higher education or a university degree *per se* that is desired. Given the fact that for most people a degree is desired but opportunities for vocational training are often ignored, it seems that for most people only the university degree counts. This background is worth noticing when observing the creation of NOU.

THE DECISION

At the outset, in 1981, NOU was initially designed neither to cater for a huge amount of high school graduates who want to go to university, nor to meet the need for vocational training amid a growing economy. Instead, the goal of NOU was to provide opportunities for on-the-job training at the university level, and to enhance the cultural level of the people (the Executive Yuan, 1981).

The idea of the project dated back a few years when Mr Hoi-san Chi was Minister of Education. Mr Chi, himself an elementary school teacher, a principal and several times an administrator of various local and central educational authorities, was committed to higher education in non-traditional ways, and he was able to push the idea of distance education forward up to the planning stage. NOU would not have existed if it were not for Mr Chi's insistence.

The idea initially met with skepticism because distance teaching was not only an innovation virtually unheard of at the time in Taiwan, but it was also a concept somehow inconsistent with traditional Chinese philosophy of education. The Confucian belief is that the value of teaching stems more likely from a teacher's deeds than from his words. Teaching by deeds is as important for children as it is for adult

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students. Since distance education is home-based, self-instructed and often in the absence of a teacher, it is widely considered of little pedagogical value.

While this concept of distance education may be held elsewhere in the world, in Taiwan distance education is accepted only to the extent of teaching through audio-visual means or giving lectures by electronic media rather than in classrooms. This, in fact, turned out to be a Pandora's box for the NOU.

The Committee on Distance Education, a small team under the Ministry of Education, was given the planning job. Its members visited many distance teaching institutions in Japan, Korea, Thailand, Australia, New Zealand, the United Kingdom, Latin America and others for field research. The committee proposed that an institution similar to the Japanese University of the Air and the British Open University should be set up at higher education level and given full university status. Partly due to Mr Chi's commitment to education, the committee's proposal was adopted with little outside input. Indeed, the committee members, who were mostly administrators at the Ministry of Education, underwent periodic personnel changes each time there was a structural adjustment within the organisation. This is perhaps why knowledge about distance education was not accumulated and disseminated to the rest of the society after so many working trips to foreign countries were made. Suffice it to say that in the eyes of the committee members, distance education was but a means to teach students through the use of audio-visual media and some supplementary printed materials. This has considerably affected the structure and organisation of the NOU, as will become clearer later.

THE LEGISLATIVE ACTION

To give NOU its legitimacy, the University Law was amended by adding an article which states that the Ministry of Education may in due course set up a distance teaching university. This is the legislative basis for the NOU Act.

It is to be remembered that the University Law governs the operation of all the universities in very broad terms. It has never been so specific as to authorise the establishment of any existing universities as in the case of NOU. At this time the Ministry came under pressure and the opponents began voicing objections as we shall see below.

According to the NOU Act, NOU is expected to follow all the requirements asked of any conventional university, in matters such as the degree structure, the credit system and selective admission of the students. The students will be conferred all the privileges normally granted to a university graduate, except a degree, upon completion of their six to seven-year programme. The number of graduation credits and the amount of time spent on earning a credit must be the same as in conventional universities. Any applicant must hold a high school diploma or its equivalent to be qualified to take the entrance examination. Detailed comments on the Act are available elsewhere (Chen, 1985; Hsu, 1987; Hwang, 1987).

It can be seen that the traditional Chinese philosophy of education is in force. Also in force is the effect of already strong competition for higher education opportunity in this newly industrialised society. These two factors seem to shape NOU into a unique entity unparalleled with either local conventional universities or distance teaching universities in the rest of the world.

THE EFFECT OF THE NOU ACT

While the draft of the NOU Act was being discussed in the Legislative Yuan, criticisms of the idea and organisation of NOU were heard within educational and intellectual communities, often with reference to conventional universities and the Chinese philosophy of education as points of departure. Yet the idea of open learning or distance education were hardly mentioned. For example, Dr T Y Wu, a physicist and president of Academic Sinica, saw NOU as an institution to give away credits and degrees... The student has come for diploma, not for pursuing knowledge... Frankly, NOU is a diploma mill which has downgraded the value of education (Wu, 1984).

Dr Wu was right in predicting that the number of students would be greatly reduced. Yet the reason for decreasing enrolment was not due to the condition that the degree would not be given as incentive, but that the percentage of passes was extremely low for the seven courses offered on a trial basis prior to the inception of NOU. The figures were between 12.6 percent and 49.6 per cent in the first semester. It was after the failures were disqualified for attendance to the second semester that the percentages of passes were raised to as low as 60.6 and as high as 80.6 per cent (Hwang, 1987).

The NOU was set up in 1986. One year later the NOU Act was finalised and the decision not to grant a degree to the students upon their graduation was made clear, still NOU attracted 36,908 applicants among whom 20,756 were admitted. Again, the pass rates (ratios of number of passes/number of students registered) for the first eight courses were surprisingly low, ranging from 14 to 57 per cent (Chen, 1987).

This year, there were 12,190 applications and the number of entrants has yet to be decided at the time of the writing of this paper. Clearly, the degree issue did not scare the enthusiastic and promising students away, but the extraordinary low pass rates had the effect of holding back those who misperceived NOU as an institution they could take advantage of.

Yet social criticism did affect NOU institutionally, which in turn might deter some potential students from entering. Firstly, article 2 of the NOU Act defines the goal of NOU as a university aimed at implementing adult continuing education in order to upgrade educational-cultural standards and quality of manpower through mainly the use of audio-visual media. The concept of open learning is completely missing, and the concept of distance education is barely mentioned in this article and throughout the rest of the NOU Act.

Secondly, NOU is the tenth national university in Taiwan. It is staffed poorly, with 150 people, faculties and administrative assistants included. The source of its operating cost is student fees. Unlike all other national universities that have been heavily subsidised, no plan has yet been formed for the government to increase its staffing and financial assistance to NOU to the level normally granted to a national university.

CONCLUSION

As a new distance teaching university, Taiwan's National Open University is based more on the traditional wisdom of teaching by audio-visual media than on open learning. It is seen merely as a kind of correspondence instruction which is useful only under otherwise very unusual circumstances, and which is inconsistent with the Confucian concept of education because it is trying to teach by words, not by a teacher's deeds. The idea of distance education developed elsewhere in the last 20 years has not yet gained ground in Taiwan. The issue centres upon granting degrees. Culturally, a university degree is respected to the extent that any granting of degree on a large scale is seen merely to foster so-called diplomaism, the mentality that a degree or a diploma counts, not the learning process or the knowledge gained. Educationally, NOU is trapped between the University Law and the NOU Act in so far as the degree issue is concerned. Finally, but not the least is the problem of under-staffing and limited financial support for the government.

In sum, NOU started small amid scepticism. There is no doubt a demand for adult lifelong education as the country heads towards industrialisation. The NOU received quite a number of applications for the entrance examination even after the decision not to confer a degree was made clear. If the quality of education is shown comparable to other universities, then there will be room for the legislators to give a second thought to the degree issue in due time (Chang, 1987). To be sure, this is but one of the uncertainties facing Taiwan's NOU.

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Student support and counselling services in distance teaching programme: the Indian experience

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INTRODUCTION

India is a vast country characterised by extremes in its physical, economic, ethnographical, social and cultural milieu. Unprecedented population growth, rapidly depleting resources and a disrupted ecological balance are the root causes of India's underdevelopment. Only meaningful education aimed at the mass of the educationally and socially deprived population can promise economic and social progress. The New Education Policy of India has clearly emphasised this:

Education is the most effective instrument to meet these challenges. Only education can imbue people with the knowledge, the sense of purpose and the confidence essential for building a dynamic, vibrant and cohesive nation capable of providing its people with the wherewithal for creating better, fuller and more purposeful life.

But it is an enormous task to start formal schools, colleges and universities to meet the challenges. For instance, India needs to open five colleges every week to meet the demand for college education. To provide college buildings, teachers, libraries, laboratories, sports equipment and other infrastructure would require huge expenditure which the country at present can ill afford. However, the country took the prudent step of launching the Correspondence study programme in 1962 "to provide an efficient and less expensive method of educational instruction at a higher level in the context of the national development of India" (Report of Education Commission, 1960).

THE PRESENT PICTURE RELATED TO DISTANCE EDUCATION IN INDIA

Alongside correspondence courses, are evening colleges, adult education and continuing education programmes. The evening courses initially started by some universities were ultimately appreciated by most colleges. The postal courses were started by Delhi University in 1962 on the recommendations of the government yet some privately organised institutes had already been producing similar courses in the country. The International Correspondence School, Bombay and the British Institute, Bombay, are two such bodies that have long been active in non-traditional and diversified education. Both these institutes enjoy more popularity and esteem than their government and University counterparts. There are now three dozen University-run correspondence course institutes besides two Open Universities in the country that conduct distance teaching courses in traditional as well as some non-traditional job oriented courses at the degree and post degree levels. However 88 per cent of the students in such institutes pursue traditional courses only (Shah, 1986:55).

At the school level, the Open School New Delhi and a couple of courses started by State School Education Boards have also been developed. Most of these institutes call their courses correspondence courses, but, "almost everywhere, Correspondence education is supplemented by personal guidance to students, facilities for the supply of books and journals, radio and television programmes, contact programmes and the use of audio-visual aids (Goel, 1973:50). Thus it would be more appropriate to call them distance teaching institutes.

SUPPORT SERVICES AND COUNSELLING

Printed words is the mainstay of distance teaching everywhere. Even in advanced and economically developed countries such as the UK, Canada, USA, Australia, USSR and Japan printed material makes up 45 to 50 per cent of distance teaching courses and open education programmes. Radio, television, telephone, week-end schools, Sunday classes, personal contact programmes, postal library service, guided study centres, evaluation of home assignments and rapport with the students however, provide support services for the students. Besides, "counselling at a distance is a natural and necessary development for an institution which teaches at a distance" (Watkins: 39). Counselling can be pre-admission counselling, counselling during the academic session, examination counselling and post course counselling etc. Thus counselling pertains both to the academic and administrative functions.

THE INDIAN SCENARIO

In India, till now with the exception of the Indira Gandhi National Open University, New Delhi (IGNOU), there are no guidance and counselling centres run by any of the institutes. Only at the headquarters, are there Enquiry Counters (not regular features in all cases) which get very crowded during admission days. Often a junior administrative functionary (mostly a clerk) who may not be well versed in all the rules and regulations of the institute attends to the queries of students.

The position of remotely and distantly located students who desire counselling through post is much worse. A pamphlet containing the gist of study programmes and admission rules, carrying no illustrative explanations is sent to them. Once the student has sought admission, more often than not, his queries (never mind counselling) remain unattended to. Nonetheless, the one-day Orientation Programme conducted by the Panjab University Correspondence Courses at the Headquarters at the beginning of the academic session has proved to be very useful to local students at least. Postal rapport between students and their tutors is minimal, partly because of the uninterested teachers and partly because of the apathy of the students themselves. However, duirng week-end classes, personal contact programmes and other such contacts students are provided with counselling mostly related to examinations.

As stated above some institutes have study centres, but only in name. These are merely part-time book loaning counters where no counselling or guidance services are provided. Wherever such centres were started, the objective was to create a nucleus for:

(a) providing a personal contact for the students;
(b) providing a forum to students for discussing among themselves their academic problems;
(c) providing an opportunity to students for assessing their way of working and allaying their fears and apprehensions;
(d) creating a spirit of teamwork among off-campus learners;
(e) finding solutions to the academic and administrative problems of the students; and
(f) using library and audio-visual aids.

Unfortunately such activities have so far eluded the so-called study centres. Even in the case of the IGNOU the study centres are visited only by about 20 per cent of the enrolled students. Ironically students at these centres do not come for any of the above cited lofty objectives. They instead insist on classroom teaching wherein no interaction is seen. The students are just silent listeners who sit taking notes.

Radio and TV are very good support services for distance learners everywhere provided the timing of broadcasts and telecasts suit the convenience of such listeners and viewers. A distant learner preferring an open pattern of education often fails to fit in with Radio-TV schedules. No wonder even in advanced countries like Japan and UK students prefer audio- and video-cassettes to radio and TV (Singh, 1986:38). In Japan alone 77 per cent of such learners possess video and 99 per cent possess audio cassette players.

In India, however, the picture is different and far from satisfactory. Only 6 (out of the total numer of 40) correspondence courses institutes provide radio broadcasts for their students. Even this support service does not reach all the students who are scattered all over the country. Moreover, these radio talks are broadcast only by one particular radio station whose range because of inherent reasons is quite limited. The surveys conducted by the Panjab University reveal that only 5 per cent of students regularly listen to such broadcasts. A majority of the students take the view that the talks broadcast before 8 am and between 5 to 6 pm do not suit them for many reasons. On the other hand, the radio stations have their own problems and are unable to provide talks at times convenient to students because during those hours they have their popular programmes. Moreover, not more than three or four radio talks are devoted to a course during the year and such an insignificant number obviously drastically affects the enthusiasm of a student. Very often the radio talk does not provide extra material on the topic: it is merely a repetition of the related printed material. Also nearly half of the talks are substandard with regard to their content and presentation. As far as telecasts are concerned only recently have the University Grants Commission sponsored telecasts been initiated. Since these telecasts are targetted towards formal university students they fail to cater fully to the needs of distant learners. Although distance teaching is 35 years old in India, no distance teaching institute has been allowed to use any TV Channel and there are no such prospects in the near future.

The IGNOU and the Panjab University Correspondence Courses have recently started preparing audio-cassettes which can be played during contact classes. The IGNOU has, however, extended this facility to those students who visit their study centres. However, in the light of the ever thinning numbers of learners in contact classes and study centres the benefit reaches only a handful of students. No doubt there are plans to sell these cassettes to learners on a no-profit basis but the step is unlikely to have much impact. The reason is that an average Indian distant learner cannot afford to purchase a number of cassettes or a cassette player.

Personal Contact Programmes are a device "of extending human and personal touch to the students who are seeking and striving learning through Correspondence" (Chib, 1977:97). Almost all related institutes in India witnessed crowded contact programmes during the first three to four years of their existence. Thereafter this support service also started dwindling. For example the Panjab University Correspondence Courses conducted such programmes at 13 or 14 places in the first three to four years of their existence and now they are held only at two places. Such a state of affairs is partly the result of waning interest of the learners and partly the reluctance of the institutes to conduct more programmes because of mounting costs and administrative problems. Postal Library Service introduced only by the Panjab University has also not become very popular with the students. Only 8 to 10 per cent of the total students use this service in the Panjab University Correspondence Courses. This percentage includes even those students who borrow books in person while visiting the institute for Personal Contact Programmes, but return the books later on through post. The Postal Library service in its strict sense has never had more than 2 per cent use. 50 to 60 per cent of students fail to return the books notwithstanding repeated reminders from the Directorate. Nonetheless, steps are being taken to strengthen this service and it is hoped that it may become an effective service one day. Lack of habitual reading (other than the lecture scripts) and the postal expenditure involved in returning the books are the major reasons for non return of books.

Response Sheet Assignment (RSA) is an important link and fruitful contact between teachers and students provided the learners demonstrate their seriousness and sincerity in preparing the responses and the evaluator reciprocates (Chib, 1977:83). However in India the RSA has been treated as a burden by students and teachers alike. The students by and large make a half-hearted attempt to earn eligibility to sit the examination while the teacher only tick marks it and awards a score with some genral remark only. Telephone as a support service or counselling device is almost non existent in India.

CONCLUSION AND SUGGESTIONS

It is a hard fact that with the exception of the IGNOU no institute provides adequate support services. The IGNOU can afford to do so because it enjoys the political patronage at the national level. The IGNOU was provided with a budget of Rs. 700 million in the first year whereas even the leading correspondence courses institutes catering to many more students than the IGNOU have been provided with budgets of Rs. 10 to 20 million after being in operation for 15 to 35 years. The IGNOU was allotted Rs. 700 million during 1986–87 whereas it ran only two Diploma Courses and enrolled 3300 students. On the other hand the Directorate of Correspondence Courses of the Panjab University which has continuously been catering to about 9,000 students on an average since 1971 (running a dozen of courses including 7 Post-graduate Courses) was allowed a budget of about Rs. 10 million only. The latter was also required to curtail expenditure on some facilities and services on the plea of economy measures. The plight of all other such institutes is no better. It may be worse in some cases. The condition is still worse in institutes which have no faculty members (they are operated by borrowed faculty when needed) or which have only one faculty member per discipline. Even in organisations where support services exist, resources are not being properly managed and channelled for the benefit of their learners. It is also true conversely, since the majority of students do not have the will and desire to avail themselves of even the skeleton services. Counselling is almost non-existent in all its facets. Nonetheless, the situation can be remedied by implementing the following suggestions:

(a) The Union Government, the State Governments, the University Grants Commission and the related universities should be liberal in according grants to distance teaching institutes.

(b) The institutes should, instead of winding up some service or facility, restructure, reactivate and renovate it. For instance the reasons for fast thinning attendance in Personal Contact Programmes should be properly probed and effective steps should be taken to counter them.

(c) The entire correspondence with learners should be done in the language they have chosen for instruction. At this time the majority of Indian students have started receiving instruction in vernacular languages and the institutes provide them printed material in the language of their choice. However, ironically enough, the rest of the correspondence (including counselling guidance if any — even by the IGNOU) is in English. Many of the students do not understand the contents of such material. To motivate distant learners, it is essential that the teachers and other related persons communicate with them in the language which they have chosen as their medium of study. Communication should be encouraging, polite and

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comprehensible. Unless these institutes care for the language of the learners, no amount of instructional guidance and counselling material sent in a foreign language can bring fruitful results.

(d) To make support services like Response Sheet Evaluation Personal Contact Programmes (including week-end classes), radio talks, etc., effective and attractive, teachers dealing with them need to be instructed and trained for the particular job. At present almost all teachers recruited by the related institutes in India are themselves the product of the formal system of education and they carry the formal bias with them. Hence a continuous programme for the educators is also needed. The IGNOU and the Andhra Pradesh Open University can tackle the "problem of teacher obsolescence".

(e) The universities and institutes pursuing distance teaching must work in close collaboration with regard to counseling and support services instead of functioning in isolation, as at present. They could have common study centres, share radio and television programmes and also the services of personnel operating such centres.

(f) In a distance teaching organisation the learner has to deal not only with teachers as in formal colleges but with a number of administrative functionaries as well. These functionaries also need to be trained to rise to the occasion which is quite challenging and at variance with their other duties (Chib, 1977:174).

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Patterns of distance education for in-service training of third-world teachers

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INTRODUCTION

In the majority of developing countries, population increases have accelerated pressures on already limited educational resources, particularly at the primary level. The extent of the problem may be quickly demonstrated by comparing developed versus developing country demographic trends. The current world population (mid-1987) is estimated at slightly over 5 billion (Haub and Kent, 1987). Populations in the developing areas, which out-number those in industrialised countries by about four to one, however, are growing at a rate three and a half times faster than developed countries. Further, if one examines the bulk of the primary-age cagetory, less developed nations have an average of 40 per cent of their populations under 15 as opposed to 22 per cent for the developed world. Africa as a continent leads the list with 45 per cent of its citizenry under fifteen years old, but Latin America at 38 per cent and Asia at 34 per cent are also very high.

A close-up view of population doubling times of selected countries more graphically highlights the exponential dimensions of the mushrooming statistics. Kenya ranks foremost among the nations of the world with an incredibly short doubling time of 18 years, but Tanzania at 20 years is close behind. So too are Liberia and Nigeria at 22 and 25 respectively. (Nigeria, in fact, is expected to become the third most populous country in the world after China and India by 2035.) Other examples may be drawn from Latin America (Honduras and Guatemala each at 22 years) and Asia (Pakistan and the Philippines at 24 and 25 years respectively). When compared to figures of 102 years for the United States and 408 years for Norway — or 462 for the United Kingdom — the reality of trying to provide quality education in the Third World takes on a new perspective. By and large, 90 per cent of the world's population growth is occurring in poor countries that can least afford to cope with rapid increases.

Another interesting comparison can be made with regard to average annual primary enrolment increases. In the 1970–80 period, for example, the mean increase in enrolment in developed countries actually declined about 1 per cent while that in the developing areas increased about 4 per cent. Sub-Saharan Africa led the way with 7.3 per cent annual increases, followed by Latin America with about 4 per cent and Asia with 3 per cent. In contrast Europe's primary school enrolment decreased by 1.2 per cent during the period, as did North America's by 2.3 per cent.

The immediate results of Third World population bulges in the under fifteen years age bracket have been strains on physical facilities, provision of curricular materials and supplies of trained teachers, particularly in the rural areas where over 70 per cent of the people reside. Faced with requirements unable to be met through traditional means, many governments have had to choose between either reducing the level of publicly supported education or trying innovative solutions. Many of the strategies adopted have revolved around meeting the problem of certified teacher shortages stemming from the inability of teacher colleges to keep pace with demands.

TEACHER SHORTAGES IN DEVELOPING COUNTRIES

QUANTITATIVE DIMENSIONS

Teacher shortages are caused by continuing high birth rates, but also stem from government policies to achieve universal primary education. The precipitous introduction of such a plan for Nigeria in 1976 resulted in 3 million new students entering the system in one year alone. It also called for the immedate hiring of 33,000 new teachers, a 25 per cent increase in the teaching corps. Altogether 290,000 new teachers were required by 1982. Tanzania experienced similar problems in 1977 when school fees were abolished and mandatory enrolment was legislated for Standards I through VII. Thirty thousand new primary teachers were required over a two-year period, or a doubling of the primary teacher corps. Other cases may be cited from Lesotho, Swaziland and Zimbabwe. Perhaps the most dramatic example occurred in Algeria after independence in 1963 when student numbers were suddenly doubled while the majority of the expatriate French teaching force returned home. Shortages have also resulted from the desirability of reducing the high teacher-pupil ratios. UNESCO figures for 1980 indicate that teacher-pupil ratios in the Third World are about double those in industrialised countries which average about 1:20. Trends suggest that the 1:40 ratio found in the Third World is likely to persist in the foreseeable future as teacher shortages will extend at least until the end of this century.

QUALITATIVE DIMENSIONS

The qualitative aspects of teacher shortages refer to the engaging of untrained, unqualified or under-qualified teachers. On a regional basis the problem is most acute in Africa. Thompson (1984) refers to a survey in the early 1980s that showed that the proportion of unqualified teachers ranged from 70 per cent in Liberia and 68 per cent in the Gambia to about 20 per cent in Malawi, Zambia and Uganda. In Nigeria the proportion ranged from 94 per cent in the Northern States to over 50 per cent in the South. In other countries the situation is only marginally better. An ILO (1981) report estimated that 40 per cent or more of all primary teachers in Bangladesh (1975), Guyanna (1975), Jamaica (1977), Sri Lanka (1973) and Trinidad and Tobago (1977) were untrained. India's proportion is also high with half of its primary teachers and 90 per cent of its middle schools teachers listed as unqualified (Brophy and Dudley, 1982).

STRATEGIES TO REMEDY TEACHER SHORTAGES

DOUBLE SHIFTING AND INCREASING TEACHER-PUPIL RATIOS

In a number of countries, the immediate solution to teacher shortages has been a double shifting of student attendance (eg. 7.00–12.00 for one group of students and 13.00–18.00 for another) with an increased teacher-pupil ratio in each. This response has mainly served to qualitatively undermine already weak systems with increased staff loads and decreased individual student attention.

EXPATRIATE TEACHERS

Although this solution has been largely applied at secondary levels, many countries continue to invite expatriate teachers to fill gaps in qualified primary teacher corps. Apart from the cultural integration problems, high turnover rates cause inconsistencies in teaching patterns. Foreign teachers recruited under local contracts are usually paid about twice the amount as a national with the same qualification. Replacement of expatriates frees budgetary resources to hire and train more local teachers.

INCREASING FEMALE PARTICIPATION

A particularly acute problem in many African and Asian countries has been the low participation of female teachers, especially in the rural areas. ILO (1981) reports that in the 1976–79 period women accounted for less than 25 per cent of the teaching force in 20 African and Asian countries; in Bangladesh, Chad, Mauritania and Nepal, the figure was less than 10 per cent.

The lack of women teachers has also had an inhibiting effect on access to education for female students. Parents in rural areas are reluctant to send their daughters to schools with only male teachers. The shortage of female teachers thus risks perpetuation as fewer girls receive a formal education resulting in an overall dearth of women available to enter the teaching profession.

OUT-OF-SCHOOL HOME OR COMMUNITY BASED EQUIVALENCY PROGRAMMES

Several countries have recognised that the likelihood of providing school buildings and fully qualified teachers is remote and have looked for other solutions. ACPO in Columbia uses radio programs, supplemented by text materials and village co-ordinators to bring basic and primary education to almost two thirds of young people and adults in the country not served by the formal education system. Jimenez (1986) reports a potential of 20 million students which may be reached by the service.

Other notable examples include Telesecundaria in Mexico which broadcasts television programs at the junior secondary level, to learning groups in existing structures like churches and village meeting halls. Tele-courses are supported by textbooks and co-ordinators, who in this case are certified primary school teachers. A similar system (RADECO) is operating in the Dominican Republic but substitutes radio for television to bring primary education to youngsters who must work in agricultural production during the day.

On the other side of the world the Korean Air Correspondence High School (ACHS) uses radio broadcasts and regular textbooks to deliver the last three years of high school. Students study at home but meet with tutors at regular high schools every fortnight for formal instruction and to discuss their course progress. About half of the eligible high school students who are unable to enter regular classes are handled by ACHS.

All of the foregoing systems are highly cost-effective (25 per cent of conventional expenses for both Telesecundaria and ACHS; see McAnany *et al*, 1983) and provide opportunities for thousands of learners who would not otherwise have access to formal education.

IN-SCHOOL EQUIVALENCY PROGRAMS

A more direct approach has been to place untrained teachers or monitors into schools to lead and follow up direct instruction via television. Up-graded or rewritten text materials accompany the broadcasts. Such was the case for the first 8 grades in American Samoa from 1964 to 1980, with expansion to include high school as well from 1966. The Ivory Coast underwent a similar process from 1970 to 1980 with 80 per cent of primary school children in the country (grades 1 through 6) being taught by television. Other notable projects include the ongoing TV Maranhao system in Brazil for children in upper primary schools and the Mauritius College of the Air for secondary students which ran from 1973 to 1980. In the latter case the system was reinforced by qualified high school teachers. In the American Samoa and Ivory Coast examples in-service teacher training operated in parallel with school instruction.

SCHOOL BROADCASTS

Another variation to improve the quality of school offerings has been the use of school broadcasts, mostly by radio, to enhance teacher lectures. In contrast to the in-school equivalency programs mentioned earlier, the teacher has the option to use or not use the broadcasts depending upon his or her perceived value of a given program.

Normally, broadcasts are accompanied by teacher notes and auxiliary, manual type, print material for students. Outstanding examples of this form of teaching enhancement include the Schools Broadcasting Service in Kenya (Coldevin, 1980) and the Radio Mathematics Projects in Nicaragua and Thailand (Galda, 1984). The latter programs have been particularly successful through encouraging active student participation, what is now termed "interactive radio", with superior results routinely occurring to radio supported classrooms.

IN-SERVICE TEACHER TRAINING THROUGH DISTANCE EDUCATION

In the wake of severe teacher shortages, all countries have as a matter of course tried to increase the output of their training colleges. In some cases lowering of entry standards have been paralleled by shortening of college preparation. The most prevalent strategy, however, has been the recruitment of untrained or underqualified teachers, pressing them into service and then bringing them up to certification or qualification through in-service programs.

Basically, three types of in-service courses can be identified, although in many programs they may be combined:

(1) up-grading courses that bring teachers from one qualification level to another and lay the basis for career patterns. For untrained teachers, these courses are intended to bring them up to certification
(2) specialist courses concentrating on one subject or area of competency (eg. New Mathematics)
(3) refresher courses which introduce teachers to discipline advances and refined pedagogical techniques.

The advantages of distance education (DE) for teacher education are manifold. From the teachers' point of view, training *in situ* means that they can attain certification without interrupting their earnings, a significant point in developing countries where many teachers have small farms. Removal to college-based training programs would imply stand-ins, where available, often with qualifications even lower than those they were replacing. A further problem with bringing trainees from rural areas to urban colleges is that they typically have difficulty settling into courses; and once they are established they may not want to return to their original posts.

DE programs imply that teachers are immediately available to schools. Large numbers can be accommodated at any one time, with no discrimination for those who live in remote areas. DE print materials also frequently serve as valuable references in locations where access to libraries is minimal. And training costs are typically half as expensive as campus based instruction.

In general, certification appears to have positive benefits on teaching. Guthrie (1985) conducted an extensive review of the literature and concluded that credentialing does have a significant relationship with student achievement. An additional trend uncovered was that the lower a country's per capita income, the greater the effects of teacher quality. Most of the studies reviewed were based on conventional training. The evidence which does exist, however, suggests that DE trained teachers are as good as their college trained counterparts (Brophy and Dudley, 1983).

Large-scale DE projects in teacher training range from those carried out in the Ivory Coast, Tanzania, Sri Lanka and Nigeria to medium and smaller ones in Nepal, Malawi, Botswana, Lesotho and Swaziland. In addition, many of the DE universities have in-service certificate programs (e.g. Costa Rica, Pakistan, Thailand and Columbia).

Among the many examples which might be selected for in-depth analysis, this paper concentrates on representative models of current practice. Within this framework, Kenya, Nepal, Lesotho and Pakistan will represent national systems using terrestrial-delivered radio broadcasting and text materials. The universities of the West Indies and the South Pacific are included as regional systems, serving a number of countries, through satellite relayed tele-lectures, texts and a variety of other media and interpersonal support.

The paper concludes with the observation that once DE systems are up and running with in-service teacher training, they are cheap and cost-effective. And in the majority of cases, they are the only feasible alternative to traditional Third World training patterns.

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Evolving principles of course and program development in distance education at the University of Alberta

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The enrolment of mature students in Canadian universities has increased steadily in recent years while the numbers of students of high school leaving age has stabilised following earlier decline. This group of more mature students is the source of increasing pressure for non-traditional access to university-level education. Characterising the province of Alberta are considerable distances separating large urban centres sufficiently populated to support the operations of a university. This then explains, in part, the pressures for continued expansion of the "wall" of universities to allow for the offering of courses and programs in a distance format. The offering of courses by teleconferencing has become an important mode in distance education.

At the University of Alberta the first courses using teleconferencing were offered in 1984 in three faculties — the faculty of Education, the faculty of Nursing and Faculte Saint-Jean. Students who enrolled in these courses were located in many centres throughout Alberta. In 1985 our first use of video-enhanced teleconferencing was in courses offered by the Department of Industrial and Vocational Education. Subsequently, all three faculties have been engaged in providing courses to students in many centres by this means.

The development of programs and courses for distance delivery requires very careful planning and preparation. Structure and organisation for learning are key elements in programs of all types. In a distance program, structure and organisation assume increasing importance because of the fact that student and professor are separated geographically, and limitations on the amount of two-way interaction are perhaps more evident than in traditional settings. Therefore, planning for courses well before they are offered is important.

As a result of our three years of trial, collection of data and extensive interaction with various personnel from the distance centres involved, a number of guiding principles for a distance delivery system have emerged. This paper outlines a number of these principles, gathered from the literature and from experience, which we have found must be addressed for the successful offering of distance education courses.

COLLABORATION

Basic to our view is the point that collaboration is essential to successful distance education programs, perhaps more so than in traditional offerings. Collaboration among institutions, administrative units and professors, as well as careful attention to the effects on regular programming has been found to be very important.

COLLABORATION OF INSTITUTIONS AND ADMINISTRATIVE UNITS

Collaboration with other universities, colleges, vocational centres and the provincial Department of Advanced Education has been critical to the development of the current enterprise. It was often necessary to share facilities, equipment and in some cases personnel in order to achieve program goals in the best possible way.

As it became clear that it would be important to enhance the technology available to support the delivery of instruction through teleconferencing, our three faculties were drawn together by common goals. Each had a strong interest in designing a technical system that would support current and future programming needs, and also in maximising success in delivery of courses and programs. It was evident to those responsible for ongoing operations in the three faculties that the University would benefit through a collaborative approach to equipment acquisition. A university-wide Distance Education

Group, comprising of faculty and staff of the three faculties and other university support units, has evolved, sharing and helping in the development of distance education approaches.

Co-operation between the three faculties and various vocational centres, colleges and universities in Central and Northern Alberta has been necessary in order to obtain classroom facilities where courses can be offered. The assistance of audio-visual technicians to ensure that equipment is assembled and ready to operate at class times has been essential. Library facilities of the colleges as well as hospitals in various areas of the province have been important to enhance the educational experience for students. The availability of the government telephone communication system after 1630 hours has made it possible to operate programs at minimal cost.

RELATIONSHIP TO REGULAR ON-CAMPUS COURSE OFFERINGS

The courses and the professors involved in teaching teleconference courses are the same as those for the on-campus courses. The kinds of graphic materials which have been produced for teleconferencing courses have enhanced the regular program and have encouraged thinking and discussion about course content. The need to plan for distance delivery has provided the impetus for rethinking all of our regularly scheduled courses. With careful planning, significant organizational renewal can be the by-product of expansion into delivery modes of instruction.

TEAM DEVELOPMENT OF COURSES

Course design, structure, modification and delivery is best shared by teams of faculty.

Planning and delivery of courses within the three faculties were carried out by teams of professors. Often, the team is headed by a professor from the faculty and includes experts from other universities, government agencies and other institutions. The team of content experts is assisted in the development process by a specialist in adult and distance education and a media technologist. This approach provided the support system and sharing of abilities that made the transition from the lecture hall to a variety of sophisticated and complicated communication technologies feasible. Collaboration by individual professors in the development and delivery of courses also had a side benefit in the consideration of the content to be included in each course.

Our experiment has demonstrated that team teaching also offers advantages, especially if it involves a first course for a professor. Working in a team permits the instructor to become familiar with the new approach and to acquire the confidence and experience necessary to continue alone. Our feedback also shows that learners appreciate the diversity of a course taught by a team.

PLANNING, PREPARATION AND COURSE DELIVERY

Concerns about programs of distance education often address that elusive area known as "the human element". This can be described as a feeling or an expectation on the part of the students that the professor is a person who demonstrates human qualities of thinking and reasoning as well as competence in the particular subject. Also encompassed is the idea that the professor is interested in the learning needs as well as the learning problems and/or achievements of the student at an individual level. The professor is seen as someone knowledgeable in a particular area who monitors, evaluates and assists the student in learning. Ensuring that human feeling characterises the learning encounter is an issue in all instructional situations; in distance programs, one needs to approach this issue utilising additional support mechanisms. It is no less possible, however, in a distance program than in a traditional one. The human element is also important in student-to-student interactions and relationships. These may be achieved in different ways off-campus but are as possible there as elsewhere.

An evolving andragogical approach to distance education has helped to implement an effective integrated multi-media approach with the emphasis on the creation of a proper climate for learning and on the particular roles, tasks and functions of the various personnel involved: professors, local facilitators, and learners as a group.

ATTENTION TO LEARNING STYLES

The results of a number of research projects (Watters, 1985; 1987) particularly with regard to the preferred learning styles of the learners involved in educational teleconferencing, have shown that (1) only 5 to 8 per cent of students preferred learning alone; (2) 14 to 17 per cent preferred learning in a classroom or group situation, and (3) the majority (75 to 81 per cent) preferred a combination of (1) and (2). These types of results, which have remained virtually constant in surveys conducted over the past six years, are fundamental to the design of teleconferencing courses offered at the University of Alberta.

PLANNING FOR A VARIETY OF LEARNING STRATEGIES

Variety in learning strategies must be provided for, both within courses and as the particular require-

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ments of each individual course are considered. The need for variety in teaching and learning approaches is as true in the distance mode as it is for traditional delivery settings. Varied educational methods and experiences in distance courses are important in that they tend to help the learner view the subject in more depth and from a number of different perspectives. Since the professor most often is not visible to students enrolled in distance courses, it becomes much more important to use a variety of methods for stimulating students' interest and thinking during teleconferencing sessions.

Learning activities that should initially be considered include self-study, on-site presentation, telelectures, tele-discussions, tele-tutorials, written assignments and local study groups. Decisions were made to include at least three different modes of instruction during any given course. Weightings placed on each mode should vary from course to course depending on the nature of the course and its place in the sequence of courses to be delivered.

Some measure of personal contact was considered imperative: therefore, on-site visits were made by the professor, who made presentations to groups. In this way professors are able to work to know the students that they will be dealing with later over the teleconferencing network.

Teleconferencing sessions provided the opportunity of delivery of course material by professors as well as giving tutorial assistance to students with respect to their self-study progress. Teleconferencing sessions were enhanced through the use of the "Telewriter" as well as previously distributed overhead transparencies or mini-lectures on videotape. The provision of a comprehensive learning guide provided overall structure as well as directing a significant portion of self-study by students.

SELF-STUDY AND THE PROVISION OF LEARNING GUIDES

Self-study is an important component of courses delivered at a distance. Because of the reduction of instructor-student contact the distance delivery mode requires much more guidance to the learner than in the traditional setting. Outlining course content and expectations so that students can readily anticipate requirements over the period of the course become essential. Designated opportunities for the student to discuss matters pertaining to the course, assignments and expectations with the instructor are also important.

Learning should be guided by carefully planned and prepared "Learning Guides" (outlines of learning activities) with clear specifications of objectives, content, activities and evaluations. Reading material often has to be included, as most off-campus students have difficulty in getting to the university library. Alternatively, instructions regarding the availability of resources must be provided. Computers at most sites have helped to alleviate the problem as students can use data banks such as ERIC etc.

PROVIDING FOR AND FACILITATING STUDENT GROUP ACTIVITIES

Learners themselves play a vital role in the learning process. As members of a groups, in their respective locations, they act as consultants and consultee among themselves and help to motivate each other. Learner groups help to develop camaraderie, allow for "comparison notes" with each other, and encourage a sort of positive competition which Thiagarajan (1978) has identified as important. Group activity eliminates the feeling of isolation often experienced by students learning through a distance education mode. The group dynamics established have been found to improve retenton rates.

Groups of students in local centres who participate in classes together establish relationships which can facilitate learning, and the use of a teleconferencing bridge which allows for simultaneous discussion groups between students in a number of locations is helpful as well. Local facilitators are generally required to help establish discussion groups and lead planned discussions. The role of local facilitators is discussed in more detial later.

MOTIVATION, FEEDBACK AND REINFORCEMENT

Research by Watters (1985) conducted with over 400 learners, demonstrates the important role that the local facilitator can play in providing for motivation and feedback. Bååth and Wångdahl (1976) have stated that the stimulating, supporting and strengthening of students' motivation is the most important role of the tutor or instructor.

The facilitator's function of motivation and feedback is one of the most important identified in eductional teleconferencing. In traditional correspondence education the rate of student drop-out has always been substantial. The feeling of isolation experienced by the learners and the absence of immediate feedback are the main causes.

As a result of the presence of group dynamics and the ability to receive and to give immediate feedback, these two problems do not exist in educational teleconferencing.

Through motivation and feedback the professor, the local program facilitator and the learners themselves are able to accomplish a number of tasks: establish a dialogue, ask and answer questions, provoke discussion, learn together and be humanistic and enthusiastic. This helps create the climate conducive to learning. According to Baath (1976) motivation is often created through the dialogue and feedback between the facilitator and the learner.

EVALUATION STRATEGIES

Evaluation in distance courses must take into account the andragogical principle that the learner must be responsible for individual progress. Learners should be encouraged to reflect on their learning performance and on the underlying beliefs they hold about learning and teaching.This implies that there must be an element of self-evaluation in all work submitted by the student, and the learning guide should facilitate this. The keeping of a class journal during the teleconferencing course is one andragogical tool which can be used to encourage reflection and decision-making based on the professor's presentations, the course readings and the discussions.

STUDENT MANAGEMENT SYSTEMS

In the distance delivery of courses, some traditional application and registration procedures, as implemented on-campus, prove a major problem; for example, deadline dates for applications. New and innovative approaches to these long-standing traditions have been experimented with. A new telephone registration system instituted by the university allows a students to sign up for credit courses from any location.

ENSURING ACADEMIC RIGOUR

Pressures to maintain academic standards are prevalent and important. Also, distance delivery of university-level courses is met with skepticism by many academics. Hence,it is important to look at the meaning of quality and the factors which lead to positive learning outcomes for students in distance as well as other programs. The concept of quality is always an elusive one and difficult to define and describe. Is it the number of hours spent in a classroom listening to a professor? Is it two-way communication — the interaction between professor and student? Is it the amount of independent reading and thinking about the subject done by the student that makes the difference? How important is the role of the professor in motivating and stimulating the student to think critically about the subject? What environments are the most conducive to learning? What is the role of affective factors in the teaching–learning situation? It is clear that there are many difficult questions and few easy answers to questions about the quality of the educational endeavour.

These issues have been addressed at the University of Alberta by implementing an annual instructional review process, keeping comparative data with the regular on-campus course offerings, and through extensive gathering of student feedback. The protectionist fears of many academics would require us to do much more.

INSTRUCTIONAL REVIEW

Course content, materials and presentation need to be reviewed and modified after each offering. The University of Alberta has been conducting extensive research on distance education and particularly on educational teleconferencing. Results of this ongoing research have helped to improve the delivery of courses. Consideration has been given to ways of eliciting student feedback regarding content, delivery etc. on both a formative and summative basis.

COMPARISONS WITH TRADITIONAL OFFERINGS

In the programs developed thus far at the University of Alberta, students in off-campus centres receive the same courses of instruction as those students who are studying on the main campus of the University. In many instances a group of students in the classroom with the professor at the main site interact with students at other sites off-campus.

SUPPORT MECHANISMS

The three academic facilities offering programs of distance education at the University of Alberta have come to realise the importance of support for students and faculty embarking upon teleconference teaching and learning for the first time. The fact that sophisticated equipment provides the vehicle by which the instruction takes place, may be intimidating to some. Even more problematic may be initial start-up problems and systems failures. To faculty and students who have had no previous experience with other than face-to-face teaching-learning, the frustration that accompanies a situation where difficulties have arisen with the bridge, the telephone lines or local equipment in centres may seem overwhelming. Therefore it is important to plan for ways to allay fear and anxiety in both students and professors in order to facilitate the success of courses and programs.

AT THE UNIVERSITY

At the University of Alberta, we have found that a support network for faculty is a key ingredient for successful courses and programs. From the point of view of the faculty member, a teleconference technician has been an important part of this network.

When computer-based transmission was initiated, it was decided to hire a technician to work with the

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equipment, prepare graphics for faculty and teach faculty and students about the use of the equipment. This decision was made when the faculty enlarged the scope of its operations to include the use of computers and telewriter software. Although the use of the equipment is not particularly complex and can be mastered by anyone, the importance of having a technician prepare the instructional materials for use during the class and have the equipment up and running when required has been reinforced over and over again by those who have used the equipment for the first time. The most important result of having a competent and responsible technician may well be in allaying the fears and anxieties experienced by those new to the method and the equipment. Unless those who are to use it develop a belief that they can do so successfully there will be difficulties.

The collaboration with other departments, faculties and institutions concerning scheduling, the availability of telephone lines and bridges, arrangements to transport the equipment from centre to centre as necessary and mailing disks to each centre to be down-loaded onto the equipment for use in class all take considerable time and effort. It is thus essential to have someone designated to assume responsibility for these functions, that is a program co-ordinator.

AT RECEIVING LOCATIONS

Facilitation at the various receiving sites is of paramount importance and has been addressed by various positions such as Local Teleconferencing Aide (LTA) or Local Program Facilitator. Whether the responsibilities are held by one person or more, we have identified three facilitative roles to be of importance:

(a) technical facilitation,
(b) administrative facilitation, and
(c) learning facilitation.

In some instances students within the class have been able to fill one or more roles.

Technical facilitation involves the scheduling of rooms and equipment, setting up and testing the communications equipment.

Administrative facilitation ensures liaison between the university and the learners, attends to application and registration forms, communications, program counselling, distribution of materials, publicity, collection and mailing of assignments, as well as providing for the proctoring of exams. This role can be especially helpful, if it is clearly understood that part of the role is to foster positive relationships between students and faculty and to report any difficulties to the professor.

Learning facilitation is required to provide for some of the duties normally expected of the instructor but which are difficult if not impossible from a distance. This role includes: advance in class activities, the direction of activities and discussions that follow teleconferencing sessions, as well as motivating and encouraging the learners within the learning process outlined by the professor. Particular attention needs to be paid to the design of the materials to be utilised; facilitators (teachers, local program facilitators or students) need to receive training in teaching and learning through this mode, particularly in relation to their functions of motivating and giving adequate feedback and the importance of group dynamics. As a result of this approach to distance education, Faculte Saint-Jean has achieved the highest student retention rate possible — 94–100 per cent of the learners complete their respective courses successfully.

In general it can be said that facilitators seem to fulfil their role most successfully when they are hired by the academic unit offering the particular educational session in question.

A SUMMARY OF COURSE AND PROGRAM DESIGN PRINCIPLES

(1) Collaboration among faculties and with other institutions.
(2) Team development of courses.
(3) A variety of learning strategies.
(4) Attention to student learning styles.
(5) Provision of learning guides.
(6) Facilitation of student group activities.
(7) Instructional review.
(8) Course and program evaluations.
(9) Support mechanisms at sending and receiving sites.

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A new adult student: learning by interactive satellite

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ABSTRACT

Modern communication technology is being applied more extensively in continuing education. The article asks whether adult students receiving their learning experiences by modern communication technology differ from those who receive their education by traditional delivery methods.

LEARNING STYLES

The introduction of new teaching technologies raises the question of whether different learning styles are needed for students to cope. Within any evening class, students respond differently to the same instruction. Often differences in response relate to the cognitive styles of the learners (Wittrock, 1980). Some individuals may be convergent thinkers while others are divergent thinkers. For the former, thinking is directed towards finding the one "right" answer. In contrast, for the latter, thinking branches outward in several directions and no single right answer will be sought or found.

Pask (1976) classifies adult learners into two distinct groups "serialists" and "holists". The serialist learner is one who is a low-order worker who operates in careful, ordered steps to reach a conclusion; the holist is a high-order thinker who works downward from an overall conception of the field, rather than upward in a series of incremental stages. A similar classification system distinguishes individuals as being "inductive" and "deductive" learners. The inductive thinker works from examples towards a general thesis statement or conclusion; the deductive thinker works from a general statement to the particular.

The implications of these research findings for educators is that thinking and learning styles can be differentiated and instruction sometimes improved by matching learners' cognitive styles to appropriate methods of presentation and to the type of mental elaboration that the learner employs. It may be the case that learners have not one but many styles and strategies for learning and that they move amongst them as the task demands.

Recent advances in communication technology have extended adult education activities especially for people who reside at a distance from post-secondary institutions. This new adult student is more autonomous than his or her on-campus counterpart and is potentially at greater liberty to employ the learning strategy considered appropriate for the tasks to be accomplished. However, adult learners with "rusty" learning skills and who lack the support of a peer group and informal contact with their instructor, may experience difficulty in establishing their preferred learning style, or in deciding which method is best suited to the particular problem.

METHODOLOGY

We know very little about how adult students are coping with the new distance education courses being offered by modern technology. Are the programmes attractive to certain individuals and not to others? What new learning skills must students acquire to understand the information delivered by certain modes of communication?

Do more or fewer students complete the new types of courses than in traditional ones? Does the manner in which information is presented by the new media have a significant impact on learning? These are a few of the questions to be researched.

The investigation described in this report was undertaken to study the impact of modern communication technology on the distance education system evolving in British Columbia. More specifically, the enquiry addressed two specific issues, namely:

(1) the effect the new technologies were having on the educational experiences being offered to

adult education students by provincial universities; and

(2) the impact the new technologies were having on the organizational structure of provincial universities.

To facilitate analysis and to arrive at some tentative conclusions regarding these important issues, the scope of the investigation was restricted to studying the satellite-based, live interactive, television programmes broadcast by the Knowledge Network for the University of Victoria. The issues were delineated to several subsidiary areas. Of the educational experiences offered by courses, the process (teaching and learning) and product (content) were given separate consideration. The organizational structure was viewed as consisting of internal and external functions.

During 1982, two exploratory studies were completed at the University of Victoria to discover what impact the introduction of communication technology was having on the educational experiences being offered by the post-secondary institutions of British Columbia. The first enquiry, coordinated by Haughey and Potter (1983), examined the principles and practices of teaching by television. The second study, a survey supervised by Forsythe (1983), reviewed how modern technology was being integrated into the higher education system of British Columbia. The findings and conclusions of this survey were included in a report commissioned by the Organization for Economic Cooperation and Development (Collins and Forsythe, 1983), which described how contemporary communication technology was being utilized by educational institutions in various nations. Data banks established for these studies served as the information base for the investigation under discussion.

The data included in the banks was obtained from many sources. Professional literature on learning theory, communication theory, adult learning through educational television, visual literacy and experiments with communication technology were reviewed and important findings, theories and concepts noted. Government documents, research reports and unpublished manuscripts on the distance education system evolving in British Columbia were examined and important facets of the developmental process recorded. Similar documents were obtained from other provinces of Canada, the United Kingdom, the United States and Australia for comparative purposes.

Face-to-face interviews were completed with senior government officials, educational administrators, university scholars and adult educators associated with or interested in the development of educational experiences by the new modes of communication. A small group of adult students, who had been involved in one adult education course were interviewed by telephone. Evaluation questionnaires completed by students enrolled in one of the first new distance education courses were reviewed and comments directly related to the issues being examined noted. A selection of video-taped broadcasts were viewed and analyzed using a set of criteria established for this specific purpose, drawn from the professional literature.

After the data for the investigation being discussed in this report had been summarized and organized for review, it was analyzed using an illuminative evaluation approach developed by Parlett and Hamilton (1972) for studying innovative programmes. Data from a variety of sources is cross-checked to establish information profiles for the examination of the issues under scrutiny. The aim of illuminative evaluation, according to Parlett and Hamilton, is "to sharper discussion, to disentangle complexities, isolate the significant from the trivial and to raise the level of sophistication of debate" (p. 2).

The relationships among institutions usually change as a consequence of a substantive intervention. Pask's (1980) Conversation Theory served as a conceptual framework for examining the changes which occurred in the relationships among institutions by the creation of the Knowledge Network. One of the principal mandates of the Network was to nurture greater cooperation and collaboration within the British Columbia post-secondary system. Most provincial institutions of higher education, have endeavoured to take advantage of the new technologies without relinquishing a significant amount of self-governance or autonomy. The term "co-operative individuality" is often used to describe the balance between the shared and autonomous aspects of the relationships among institutions. This balance is not static but is a dynamic evolving structure which can be easily disturbed by planned or unplanned interventions. The Knowledge Network, as Collins (1983) points out, established a creative tension among institutions involved in the new distance education system. Pask's (1980) Conversation Theory provides an effective framework for studying this phenomenon.

FINDINGS

The television broadcasts and printed matter reviewed suggests that the focus of instruction was on content. All instructors appeared to be primarily concerned with providing students with knowledge about a specific subject. Learning packages were comprehensive, detailed and well produced. Generally, minimal attention was given to encouraging reflective thinking, creativity and further enquiry. Several students commented upon the comprehensiveness of the programmes which they perceived could produce information overload. Most of the students, however, did appreciate being provided with learning packages prior to broadcasts commencing. By possessing material in advance, students were able to read over professional literature at their leisure and acquire an overview of the subject being studied.

There was general consensus among the respondents that the university lecture format was inappropriate for satellite broadcasts. Even if the presentation was interesting, students quickly became bored and inattentive. Many instructors dominated the learning environment by speaking for most of a broadcast. This situation occurred as a consequence of a number of factors. Owing to insufficient preparation for the television, instructors tended to employ teaching methods, evaluation procedures and assignments which they had used successfully in a traditional unversity classroom setting. Like new teachers, many instructors were concerned they would not cover all the material in the time available. Fear of failing to deliver sufficient information meant instruction often occurred at a rapid pace.

The students generally did not participate in television discussions; which only encouraged instructors to control the learning environment and to cover as much material as time permitted. Why didn't the students interact with the instructors or with each other? Dialogues with the students, instructors and coordinators seemed to indicate that most of the students were "professionally shy". To speak in a public arena is not an easy talk for most people. A number of the students who commented on this subject reported that they were embarrassed to voice their ignorance on the television network.

Early in a series of broadcasts opportunities should be provided for students to gain confidence and experience with the media. Not all students want to speak during a broadcast. Several students emphasized that they had no desire to participate in conversations because they possessed a good understanding of the material presented. They thought some dialogues a waste of time. Without appropriate control, some students can use a distance education course as a platform for expressing their personal biases.

Under these conditions, instructors who take a cognitive approach to teaching encounter difficulties. When in a counselling programme an instructor endeavoured to explore alternative ways of coping with psychological issues there was a minimal response from the students. Similarly, attempts to encourage students to develop skills of "learning to learn" were only marginally successful. Neither the printed matter nor the learning climate were conducive to a cognitive approach.

The majority of the instructors possessed minimal knowledge of the students they taught. Prior to the broadcasts, instructors were rarely provided with any information about their students. This situation is common in a traditional university lecture setting and appears to create few problems for instructors. Such an observation may or may not be true. Perhaps, faculty members who teach regular on-campus classes would welcome more information about their students. Research needs to be undertaken to examine this issue.

Insufficient information about students is a serious deficiency for distance education instructors. When instructors did endeavour to discover more about their students, such enquiries were very welcomed. Recently, this situation has been improved by encouraging students to participate in teleconference calls, to telephone instructors for assistance, to contact counsellors and to use information lines.

Modern communication technology possesses the capacity for presenting material visually as well as verbally. Film animations, video inserts, role play and analogies can be effectively employed to explain concepts, to discuss issues or to report research findings. Verbal language tended to be the primary method of communication in many early broadcasts. Minimal use was made of visuals in any form. Discussions with administrators and distance educators revealed that many instructors were perceived as being visually illiterate. Also, instructors usually resented technicians giving them advice on how to present material. Requests to "smile" and to look "aesthetically pleasing" were not received warmly.

Production managers are aware of the need for programmes to be technically well-produced and professional looking. Adult students do not expect educational programmes to compete with commercial television but they anticipate that broadcasts will be well produced. The interviews indicated that instructors, technicians and distance education coordinators needed to discuss their differences so compromises could be reached. Recently, project teams have been established to produce programmes which has reduced the tension and resentment among production staff.

Many of the technical problems associated with early broadcasts have been eliminated. One human factor which continues to generate problems for a production team is the ability of an instructor to project a warm and friendly personality through the medium. Students seemed to respond much better to presentations, according to many of the individuals interviewed, if instructors were relaxed and personable when teaching on television. As one coordinator noted, it would appear that a special type of scholar is needed to teach by the new medium. The selection of instructors may have to be undertaken with greater care than that given at the moment.

COMMENT

Recent applications of communication-technology at the post-secondary level have shown it to possess great potential for offering adults in non-urban areas a multitude of learning experiences. If contemporary modes of communication are to attain their potentiality, more consideration must be given to the special needs and unique characteristics of the new adult distance education student, and of the medium itself.

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Resourcing distance education for rural identity

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There is a risk that policy makers and administrators of education systems become patronising and paternalistic when they seek to overcome perceived educational problems existing in rural areas. In the wake of what has come to be called "distance education", what is often sought after in the application of technology in remote schools is a more equitable sharing of resources. What may be overlooked are the second-order consequences of government actions. There are potential dangers associated with government intervention in any society, especially the rural sectors of societies. Because of their isolation, the rural sectors of society are very susceptible to change from metropolitan sources — sometimes trading off worthwhile things in their community for what they perceive as improvements emanating from the cities. Since all educational enterprises are interventions with the ever-present danger of becoming intrusions, it is crucial that the recipients, especially those in the rural sectors, are aware of what they are trading off and what they are receiving in return. This paper is not advocating an anti-technology stance, but is alerting the reader to some issues which we believe have not been debated sufficiently either by those who implement distance education programmes or those who would like to see a body of research built up around distance education.

The approach used in this paper is to place technology in a cultural context. Cultural purpose will determine content selection, processes, strategies, resources and methodologies. If the cultural purpose is seen to be shared value and retention of an identity of a community which is rural based, within a wider national cosmopolitan framework, then content, processes, strategies, resources and methodologies will fall into line. It is argued that this approach can provide some substantive criteria for the selection of appropriate technology and guidelines for the widespread application of that technology in rural schools.

For ten years, the Country Education Project in Victoria has been seeking to redress rural disadvantage by using technology to provide better education in small schools (Conboy, 1982). The key feature of the Country Education Project philosophy has been its emphasis on local participation and decision making. "In the Australian context, some of the most vital rejections of such a centralist and arbitrary philosophy have come from rural people in isolated areas. The irony is that, while rural people are systematically disadvantaged by an urban-orientated, academic curriculum, they are also remote from the central power bases that they can and do, indeed must, adapt the curriculum to make it more locally relevant. Country people have a direct honesty that sees through academic pretence, that reveals the absurdity of teaching the same things in the same way in every part of the nation, that defies attempts at arbitrary control. Yet they also often lack the confidence, the organisational know-how, the ability to articulate their ideas, those forms of competence necessary to a successful rejection of education that is not locally relevant" (Edgar, 1979, 99).

At the heart of the Country Education Project process is the belief that education is much wider than what happens in schools. Educational disadvantage grows from community isolation and to remove that disadvantage we must work on the total community. "We believe that it is political know-how that counts, a sense of efficacy as people acting in the real world". (Edgar, 1979, 103).

Giving people responsibility for making decisions about the education in their community will partly ensure that the decision makers have access to some of the information on secondary consequences rather than information solely about whether they are achieving primary goals. Education is a cultural enterprise which is concerned with continuity and change. These are handed down and developed. Purposes are derived from the historical culture of Australia. Therefore, education is not entirely conducive to democratic processes at every point in the formulation of its aims and its decision making processes.

TECHNOLOGY AND RURAL IDENTITY

A more pressing concern, at least in the short term, is the threat of communication technology to the autonomy of some schools and their communities. Generally, we are aware of the more prominent characteristics of rural cultures — the greater emphasis on personal relationships, stronger religious and kinship affiliations, and stronger commitment to communities in general. This is reflected in rural education with parents in general having closer contact with their schools particularly at primary levels. This generic type of culture has been discussed in relation to ethnic minorities in Australia (D'Cruz, 1986). This analysis is valid for rural cultures. After allowances are made for differences in degree, even kind, there are strong similarities between the cultural orientation of those sectors of Australian society designated as rural and as ethnic. Lived culture can be classified as either concrete or abstract. In more concrete cultures, there is emphasis on the group as distinct from emphasis on the individual which is found in more abstracted cultures. Autonomy and independence are valued more in abstracted groups, while a sense of belonging and interdependence are valued higher in concrete cultures. It is important for rural communities to know (by surveys, discussions and inventories) what exactly characterises their distinctiveness vis-a-vis the urban centres and other rural centres. Otherwise they will not be in a position to assess the nature and extent of changes that education and/or technology may be contributing to in their midst. There is a danger of being carried away by the promise of technology and distance education to deliver education to large numbers of learners, freeing them from the trammels of space, time and age (Yu Xu, 1985, 96). This is a recipe for an abstracted culture with no sense of history or locality. What might be seen as providing flexibility to a labour force may give rise to a range of social problems when people in traditional cultures are removed from their communities. Yu Xu mentions the problem in China of a mismatch of TV college graduates and the type of work they are expected to do (Yu Xu, 1985, 102).

In general, Australian education systems have made little distinction between urban and rural schools. The Listening and Responding Report (1983) prepared by the Education Commission of New South Wales indicated that there was a need to acknowledge the validity of both rural and urban heritages. There has been little attempt to capitalise on some of the positive features of rural schools. Any intervention in rural cultures runs the risk of destroying "the concrete and exclusive kinship ties and its concomitant ideology of personal service and group loyalty of an extraordinary extended kind involving groups that at best could only be intuitively known" (D'Cruz, 1986). The current Victorian project, Commonwealth Resource Agreement: Using Technology to Improve Retention in Years 11 and 12 in Rural Schools presents a challenge to educational planners. It is a centralist intervention implemented by small schools. In order to become something other than a centralised initiative, considerable care in planning is necessary to prevent the second-order consequence of the loss of rural autonomy emerging.

Generally, there appears to be disillusionment in the community about education's use of resources and governments now are less willing or unable to make funds available without constraints attached to how they will be spent. This is not necessarily and altogether a bad thing. Reduced resourcing will encourage individual schools to look to other schools, to their communities and industry generally to supplement their resources.

HUMAN RESOURCING

It is our contention, and that of others, that the most important resource available to the learners in a distance education system is teachers (Kaushal, 1985). It seems logical to develop resources already in existence rather than rush headlong into trying to use new resources which may not be appropriate in the short term. There appears to be a shortage of preservice courses throughout the world to train distance education teachers in planning, designing, writing and editing course materials; in using audiovisual materials as supplements to written materials; and in developing dialogue with students in distance education modes. There is only one tertiary course in Victoria, the Graduate Diploma of Educational Technology offered by Victoria College-Torrak, which addresses these issues. Some content is picked up in courses provided by other institutions but in general, tertiary teacher training institutions have been slow to teach graduates skills such as interacting with students in the distance education mode. One reason at least in the Indian context and most likely Australia as well is that decisions about distance education are taken by senior university staff in traditional institutions and imposed on distance learning institutions (Datt, 1985). While the resource Agreement has encouraged regions to liaise with local tertiary institutions and some progress has been made (Bendigo College of Advanced Education are investigating introducing a course in distance education and have requested access to the

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communication technology in schools), the Ministry of Education needs to take some central initiatives in this area.

COURSE AND SOFTWARE RESOURCES

Some writers regard high quality software as the most important resource in distance education. It is argued that at least for computer-assisted instruction and probably film and television as well, it is the shortage of adequate software which has prevented educational technology achieving its full potential (Levin and Meister, 1985). In the past, the focus has been on the equipment rather than on software and other requirements for providing educational services. Firms are inhibited from undertaking investment in software because of a lack of market information, and the need for large amounts of initial capital. The decentralised nature of school purchasing decision, the range of equipment in schools and illegal copying are further difficulties. Schools are inhibited from making decisions about buying software by a lack of clear adoption policies and an irregular funding base.

Because computers at this stage of their development process data and information more effectively than abstract concepts and theories, there is a tendency to concentrate on their administrative function rather than their educational role. There is an understandable tendency for some developers of computer systems to see curriculum uses as complex and confusing. If education systems are to develop adequate amounts of instructional software as distinct from administrative software, then incentives must be provided for teachers to design the materials and make them freely available throughout the system. The Victorian Resource Agreement is establishing an Electronic Curriculum Materials Library which will be a facility for teachers to deposit materials they have designed and found effective, and for other teachers to access for their own classes. Because most private firms are unlikely to take the risks to develop software, strategies and administrative structures like this Electronic Curriculum Materials Library must be developed to encourage education systems to produce education software. It is at points like this that technical innovations like VISTEL, as a support system, could be crucial in the transmission and spread of what has been deemed desirable in the areas of curriculum, culture and understanding. While undoubtedly we see the potential of VISTEL as a support system, some worrying aspects of its full effectiveness in regard to rural schools remain.

While we accept VISTEL's potential efficiency in terms of transferring and receiving feedback between the cosmospolitan centre and the rural centres, its ability to develop and even generate intercommunication between the rural centres themselves has yet to be demonstrated. An issue here has to do with the tendency of technical systems and processes to create patterns of dependency and lack of autonomy through their very effectiveness. Rephrased, the question is, would a stunningly effective device eventually determine, even dictate, the types of social and other relationships that is possible and desirable within the wider community that is Victoria. Our hunch is that people in rural regions are far more interested in talking to each other than they are in listening to their metropolitan counterparts — a tendency that might be a justifiable defence mechanism to retain the integration and identity of rural communities against continual onslaughts from the metropolitan and cosmopolitan thrusts of individualism.

INSTRUCTIONAL SETTINGS

The most neglected aspect of distance education and a potential resource is its instructional settings. These can vary enormously — individual homes, hospital beds, prisons, the many work places and in the case of the Victorian Resource Agreement, post-primary schools in small rural towns. Ten years ago the Country Education Project began to appreciate the importance of communities in assisting the education of children and ensured that it had community representatives on all its committees. We have addressed the importance of rural communities elsewhere (Conboy and D'Cruz, 1987). The present Resource agreement will provide communication facilities in schools which will be available to the community in non-school hours. Such a facility should bind the community closer to the school and bring groups other than parents to the schools. The potential for mutual benefits from such an arrangement are considerable. Rural schools are largely staffed by teachers who have no close cultural links with the area in which they teach. While they bring a beneficial range of skills to a rural community and give country children insights into a world beyond the confines of their community, they do not have the benefit of a lifetime of personal interaction within the community in which they work. They may exist as an intellectual island in some rural communities and any development which brings them closer to their community should be encouraged.

CONCLUSION

While there is a greater emphasis on using technology to develop a more highly skilled and versatile workforce to achieve largely economic goals, planners should not lose sight of the cultural context in which these changes take place. This is particularly relevant in some of the more vulnerable and disadvantaged cultural groups such as the poor and the isolated. In the face of declining educational resources, planners should ensure that funding is available to develop links between teachers in other schools and between schools and their communities. The Country Education Project has provided the model for these links in rural areas. Technology will transfer expertise and locally produced education materials readily to all schools. We need to develop frameworks for this co-operation and use technology for linking the network together. It is only through such co-operation between regional schools in the rural area that sufficient educational resources can be available for children who live and learn at a distance. The criteria for expenditure have to meet the two not-negotiable needs (with whatever else may be considered): firstly, the need for appropriate technology promoting a desirable educational context for the teaching and learning of students in more distant parts of the state; secondly, the further need to promote and develop educational and social interaction of clusters of schools in the regions to enable them to provide each other with mutual support in their attempt to retain their rural cultural identity.

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Students supporting students — a personal perspective

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Throughout New Zealand, important liaison work with extramural students is done via the Massey University Extramural Students' Society's network of volunteer Area Communicators. Predominantly extramural students themselves, these volunteers play a significant role in supporting students at a local level in the regions of New Zealand where they live. To provide effective assistance these supporters of other students must be supported too. In recognition of this need the Extramural Students' Society invited Communicators to Massey University in November 1985 for the first on-campus training workshop.

This paper describes the students' support network, the role of the Area Communicators and the effectiveness of the workshop in improving skills and providing support.

As the major provider of distance tertiary education in New Zealand, Massey University caters for extramural students throughout the country. The extramural programme offers 400 separate papers which may be credited to a range of 10 degrees, 20 diplomas and 4 certificates. Massey is a bi-modal multi-faculty university; the extramural courses are correspondence counterparts of internal courses taught by the same staff and assessed in the same manner. Most students are able to complete a qualification through Massey University entirely through extramural study.

It is difficult to identify the typical extramural student. Extramurals range in age from 17–70+, and come from a diversity of backgrounds and occupations. They enter extramural study with varying needs and many need encouragement to gain confidence, and assistance to develop the necessary study skills. I enrolled at Massey in 1979 on "provisional admission", that is, like approximately a third of all enrollees, I did not possess a recognised enrolment qualification. Over the next six years, all but one spent as an extramural student, I studied for and completed a Bachelor of Arts degree in History. In the process, I gained considerably more than I anticipated. My initial uncertainties rapidly changed to become an ongoing, challenging and deeply satisfying learning experience with gains in many aspects of life beyond just academic achievement.

When asked in 1982 if I was interested in joining the volunteer student support network administered by the Extramural Students' Society, I readily agreed — pleased to be able to return something of use to the system that had given me so much. Today almost 60 Area Communicators, along with 15 contact people, act as resource people for students in their areas. As well as putting students in touch with each other (making use of the Area Class Rolls provided for them by the University), Area Communicators provide a sympathetic and understanding ear, as necessary. Often more practical advice is needed: when to enroll? where to buy text books? how to find sufficient time in a busy day to study? Area Communicators often provide the first point of contact when problems arise and information and/or support is required. The needs of students are many and varied and the empathetic response of Communicators can help students over the hurdles of studying at a distance.

For Communicators, contact with students is usually by telephone, with occasional home or work visits, plus two or three area group meetings each year. For me, the benefits of being an Area Communicator outweigh the time spent on the telephone and, on occasions, the disruption, of my limited free time. Not only have I met many interesting people, some of whom have become valued friends, I have also gained effective listening and communication skills. During the two years I spent as a *full*-time student, when it was necessary to reduce severely outside activities, the ongoing contact with other extramural students provided me with valuable support and social contact. Of immense practical benefit was the ready access I had, through my frequent contact with other students, to study aids such as secondhand text books, study groups, and helpful background information and opinions concerning specific courses.

Unlike most other support networks the Massey Student Society model operates independently of the University and is funded entirely by the Extramural Students' Society. Most of the Area Communicators are, or have been, extramural students and it is this concept of students supporting students that is the unique feature of the support network. Student initiative conceived the network, as shown by Williams and Williams in their ICDE funded research project "The Evolution and Function of a Student-Operated Support Network for Distance Students":

> Many (students) felt the need for readily available support to compensate for their isolation and initiated local activity by organising study groups amongst students studying the same subject.
>
> (Williams & Williams, 1985, p. 6, Report)

Later the Society accepted the responsibility for the establishment and maintenance of a network of volunteer "Area Communicators" throughout New Zealand. The main responsibility for developing and servicing this network fell on the shoulders of the Society's newly appointed Liaison Officer, Barry Buckton, in the late 1970s, and in 1983 passed to his successor, Maureen Williams.

There are advantages in using students, rather than University employees, to support other students: a sense of identity and empathy results from group membership — Communicators and students meet on an equal basis with Communicators being able to offer advice and support built on a common experience. Or, as one Communicator summed it up:

> My assurances and advice is seen as kosher because I'm handling it . . . the same conditions they have to face.
>
> (Williams & Williams, 1985, p. 35, Report)

Furthermore, as Meacham (1984) points out, "contact with peers serves a socialising function" and the aim of student support should be to help students develop "a view of learning which is satisfying to the individual and acceptable to the institution".

But, in order to provide effective support for other less experienced students, Communicators need supporting too. A recommendation from the research report, "The Evolution and Function of a Student-Operated Support Network for Distance Students" was:

> That the Society should investigate further the need for training for Area Communicators, and the form such training should take.
>
> (Williams & Williams, 1985, p. 62, Report)

A questionnaire, to gauge interest, was sent to all Communicators and responses indicated a clear preference for a weekend seminar. Although ongoing support was available in the form of regular newsletters, on-campus meetings during the vacation courses, and bi-ennial visits to all areas by the Societys' Liaison Officer, Communicators wanted an extended opportunity to meet. To quote one:

> I would really appreciate a time not associated with vacation courses when roles, contacts, administrative aspects, etc could be discussed.

In response to this demand, the Society invited Communicators to Massey University for the first on-campus training workshop in November 1985. Over two days, forty four Area Communicators and contact people gathered with University staff and auxiliary personnel to exchange information, share experiences and revitalise enthusiasms. All costs for the weekend were met from the Society's funds.

For me, the greatest benefit of the weekend was the interaction with and shared learning between Communicators. The frequent discovery that others shared similar experiences helped to lessen my own sense of isolation. Areas vary in size and student numbers, and have different needs and resources. For example, Dargaville has about 40 students spread out over approximately 100 kilometres, while my area of Hawkes Bay, roughly comparable in size to Holland, has two Area Communicators to cater for approximately 700, predominantly urban students (1987 figures).

Qualities of an effective Communicator were discussed, and again it was emphasised that more important than "expertise", are qualities such as approachability, being a good listener, and a basic familiarity with and understanding of the demands of extramural study. The limitations of the role were stressed, much to the relief of some Communicators, who felt inadequate in the shadow of a few highly active others. Yet as one Communicator expressed it:

> I think it is important for us to realise that we are just Communicators and not mini Masseys all over the nation.
>
> (quote from workshop transcript)

Another summed up the role as: "Commonsense based on experience".

The two days spent together, and away from all other demands, helped foster a sense of belonging: of group membership and identity. It was also a chance for University staff, both teaching and administrative, to explain their individual roles, concerns and future plans. Communicators were brought up to date on the functioning of the University system and given a clearer idea of the best person to refer an individual student to when problems arose. It was also an opportunity for Communicators to explain *their* roles to University staff, and to emphasise that, as student volunteers, they should not be expected to perform tasks for staff that should be the responsibility of paid, University officials.

An ongoing issue over the two days concerned the most effective way of informing students of the support network. While Communicators can, and at times do, initiate contact with individual students, this is too much to ask of Communicators on a regular basis, especially in large student populated areas. It was agreed that, ideally, *students* should initiate contact with Communicators, and that the high withdrawal rate might be reduced if students experiencing difficulties contacted Communicators before problems overwhelmed them. How to encourage contact was the major issue.

Of the many options discussed, two have since been put into effect while others are still being considered. One is an information sheet comprising the first page of the Students' Society Newsletter, outlining in clear, concise language what the Society's Area Communicators can do for students. I especially like the final statement, which follows on from a comprehensive list of ways in which Area Communicators *can* assist students. It reads:

Your area Communicator *cannot*
a. Act in any capacity as an officer of the University
b. Sit your exams for you (tough).

Approval was given by the Management Committee to the suggestion that funding be provided to allow Communicators to send introductory letters to new enrollees in their areas. Sent at the start of the new year, these letters introduce the Communicator and outline the resources available, with perhaps an invitation to a forthcoming meeting. The effectiveness of these letters as "icebreakers" can be seen in the increased numbers of students attending area meetings. For example, attendance at the regular February meeting in Hawkes Bay increased about 20% over previous years to about 70 students, the majority of whom were first year students.

To increase knowledge of the services the Society provides, a poster has been produced and bookmarks, bearing the words "We Support You", were included with the Society's introductory Newsletter in 1987. For the future, a publicity pamphlet is planned.

Those attending the weekend workshop also supported two proposals to give students greater opportunity to voice their opinions and concerns. One is the Comments Book now available at on-campus courses in which the students can record both positive and negative comments. These are later collated, and conveyed to the appropriate people by the Society's Liaison Officer. The second innovation has been the awarding of merit certificates to staff nominated by students as being particularly effective. These merit awards have been well received by all recipients and have an added value, as the Society publicises in the University's staff newsletter and in the Students' Newsletter, the list of recipients and the reasons *why* they were deserving of recognition. Thus, there is an increased awareness of the needs of extramural students.

But what of the future? The first Communicators' Workshop fulfilled expectations and another was held in November 1987. For new Communicators, this weekend should provide an invaluable introduction to the role. "Old hands" will be able to share knowledge and develop some new skills. The Society's support system depends on the sharing of experiences amongst its members.

The Extramural Students' Society's support network was initiated by students to compensate for the isolation of distance education and the lack of any formal regional support. An interesting development in recent years has been the University's move to decentralise its services away from Palmerston North by developing its own support network of Regional Course Advisers. To date, four regional officers have been employed to act as official representatives of the University on a part-time basis. Some University Departments, such as Nursing Studies, Education, History and Sociology, also employ part-time Regional Tutors to assist their students. These three services — the Society's Area Communicators, University Regional Course Advisers and Departmental Tutors — have a common objective, which is to bridge the gap between the University and the student; to provide help *when* and *where* it is needed. However, the Extramural Students' Society, through its Area communicators, can give the kind of support not possible from paid representatives of the University. As Sewart (1983) pointed out, there can be a "barrier to rapport and trust" on the part of individuals who are employed by the Institution. Area Communicators *truly* represent the interests of students, being, or having been, students themselves.

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Developing Scottish studies for distance education

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This paper describes the design and development of course materials for Scottish Studies — history, literature and culture — by the Open University in Scotland. The Scottish Studies Project sprang from the desire of faculty in Scotland to develop teaching material with a specifically Scottish content, since UK-generated courses for both undergraduate and continuing educational levels — almost inevitably — are concerned with wider issues. Scotland has a unique history, culture and institutional development which has for long been recognised in school, college and university curricula — though sometimes with the same degree of "cultural cringe" which typified the more recent discovery of, say, distinctively Australian Studies on the other side of the globe.

While the majority of the conventional universities teach Scottish History and Literature and a few more specialist topics or periods; while there is considerable international interest especially in the United State and Canada; while there are several research institutes, such as these at Edinburgh, Aberdeen, Old Dominion and Texas (U.S.A.) and Guelph (Canada) devoted to the subject; and while many university extra-mural departments offer classes in Scottish Studies, until 1986 no attempt had been made to offer a broadly based course by distance education (DE). The success of the OUS Scottish Studies Project has however led to the subsequent development of Master's Degree programmes in Scottish Literature by distance education at the University of Glasgow, and several co-operative enterprises between the OU in Scotland and other institutions such as the University of Edinburgh and Langside College, Glasgow.

The Scottish Studies Project began in 1980 when a group of academics at the Open University in Scotland met to discuss the development of a course on Scotland, designed for the OU's rapidly expanding continuing education programme. An ambitious scheme sought a curriculum that would include study of the environment, history, economy, political institutions, education and culture — emphasising their distinctiveness in the UK context. While this remains a long-term objective it was thought expedient given available personnel and potential resources to look to the short-term development of pilot materials for self-study on history and literature, which could be incorporated in a low-resource strategy. In 1981 a start was made with *Scottish History*.

In a sense the development of the *Scottish History 1560–1980* component was a relatively soft option, given the availability of standard texts on the subject and period. It was decided that the "wrap-round approach" would be most appropriate and that by using four set texts (one of which was a useful reference work) students could be provided with a comprehensive overview of Scottish historical development. But by focusing on a number of key themes and issues a problem-centred approach would let students escape the traditional view of Scottish history as a series of dramatic events (usually involving the English) or an ill-lit stage across which strut the great historical figures of Mary, Queen of Scots, John Knox and Bonnie Prince Charlie. Using the critical background provided by the set books, *Scottish History* — in its modest way — would try to strip the subject of some of the myths which ave dogged new interpretations of the past, notably such major themes as the Reformation, the Union on 1707, the Highland Clearances, or "Red Clydeside" politics during or after the First World War.

Scottish History would therefore cover 16 topics and be designed for study over either a 16-week or 32-week period, depending on the time available to the user. The themes are listed here in the Appendix. Each topic is introduced in a short essay, preceded by a clear statement of objectives and set reading to which the student is immediately directed. The course material then focuses on the main issues and debates, reviewing current thinking where appropriate. The student's attention is drawn to deficiencies in the set texts where such exist and a section on up-to-date further reading provided. Finally a series of self-assessment questions can be used by the student as follow-up exercises. The level throughout was pitched at the intelligent general reader with the continuing education market in mind.

Scottish History was prepared in camera-ready copy for printing and publishing in 1982, and was publicised via the OU system and more generally via the media, libraries and other educational outlets. Some favorable reviews were received and the level of direct sales thereafter encouraged Stage II of the Project, the development of a *Scottish Literature* Study Guide.

As an exercise in the creation of DE material *Scottish Literature* posed several problems. Unlike *Scottish History* for which a range of suitable texts was readily available, standard works in literary criticism were hard to come by, being mostly out of print. Given the format and workload already established by *Scottish History* it also seemed unlikely that a broad sweep of Scottish literature could be encompassed. Would the student be expected to read out of date works of literary criticism and a potentially daunting list of novels, poems and drama in Scots, English and Gaelic? (Some out of print.)

So an early decision on approach and content indicated a series of case studies — some period-based but the majority reviewing the works of the great scottish writers since the medieval era, concentrating on the Modern Scottish Novel and poetry. Most of the works would be readily available in local libraries. The one set text, as events transpired, was soon joined by another — the only modern review of Scottish literature generally available. But the *Scottish Literature* guide was not a "wrap-round" development, because students are expected to read much more widely than the set texts. Conventional wisdom suggested the preparation of a Course Reader incorporating out-of-print texts but this was ruled out on grounds of costs, and the potentially thorny problem of copyrights.

The topics chosen (see Appendix) began with a discussion of early Scottish Literature, the great Renaissance poet, Henryson, the literature of the sixteenth century and that of the seventeenth and eighteenth centuries. Much of this is in Scots so care had to be taken in the selection of texts and to ensure comprehension. This was less of a problem with later themes, the majority being covered by modern editions. Finally, the problem of literature in Gaelic was solved by pointing students to some editions which included English translations; though nevertheless encouraging those with some knowledge of Gaelic to use it and enhance their appreciation of the literature. The approach in each theme followed that already established in the *Scottish History* Study Guide. The development team would be first to admit that there are problems in student usage accentuated by difficulties of access to texts but the feedback to date at least demonstrates that users are encouraged to search out and read many of the recommended texts. Publication took place in 1984 and good sales were immediate and sustained following favorable press coverage and reviews. Tutor notes were produced suggesting how the two Study Guides might be used in tandem (see Appendix).

The third element in the package, *Scottish Society and Culture,* was therefore designed to link the two existing *Study Guides*. It would achieve this by filling in critical historical and cultural background and covering some additional themes, such as art, architecture and educational developments, neglected in earlier course material. It would have no set book as such and although seen as a critical link between *Scottish History* and *Scottish Literature* was also conceived as a stand-alone publication. The format was much as before, with four sections covering culture and history before 1560; Reformation and Union — cultural effects; Enlightenment and Romanticism; and Scotland in the modern age.

Scottish Society and Culture was published in 1986 and was immediately followed by the launch of the *Scottish Studies* open learning pack. Again this was widely publicised throughout the country and favorably reviewed. Sales have been constantly sustained by further promotion and the pack achieved UK wide recognition by its adoption into the *Open Opportunities* programme of the Open University in 1987.

A major reprint in the same year permitted a measure of updating. While the OU itself does not offer tuition — the course being designed for self-study — several institutions have provided student support and others are being encouraged to do so.

Having launched this modest, low-resource initiative the project development team foresee further improvements in print quality, format and content. They would greatly like to produce the more sophisticated materials and extended treatment which the subject-matter merits and are looking forward to achieving this in the future.

APPENDIX

Scottish History: Themes

(1) Scotland on the eve of the Reformation
(2) The Scottish Reformation
(3) Mary, Queen of Scots
(4) James VI and I
(5) The Crown and the Kirk, 1625–85
(6) Scotland on the eve of the Union
(7) The Union of Parliaments and its aftermath
(8) The Lowlands and the agricultural revolution
(9) The Scottish Enlightenment
(10) The Highlands to 1880
(11) The industrial revolution
(12) Government and politics, 1789–1918
(13) Victorian Scotland: Workshop of the Empire?
(14) People, towns and cities
(15) The inter-war years
(16) Post-war Scotland, 1945–80

Scottish Literature: Themes

(1) Some aspects of early Scottish literature
(2) Robert Henryson (ca. 1420–90)
(3) Scottish Literature in the sixteenth century

(4) Scottish Literature from Reformation to Enlightenment
(5) Robert Burns
(6) Enlightenment and feeling 1746–1832
(7) Scott, Galt and Carlyle
(8) James Hogg
(9) Robert Louis Stevenson
(10) The kailyard and reactions
(11) Hugh MacDiarmid
(12) Lewis Grassic Gibbon
(13) The modern Scottish Novel
(14) Modern Scottish poetry
(15) Gaelic Literature
(16) Scottish Drama

Notes for Tutors

(1) Clearly these *Guides* are primarily designed, like other Open University materials, for self-study using the background reading recommended. In the case of *History* this is pretty self-contained in four texts; while *Literature* (quite understandably) requires wider reading. Students could certainly work through the *Guides* at their own pace, but we estimate that a reasonable appreciation of the ground covered could be obtained in 16–20 weeks. Working at a more leisurely pace, 32 weeks of study (the standard OU period), a fairly deep study could be made in each *Guide*.

(2) Over the 16-week structure these *Guides* would be ideal for a two-term course in adult education, the tutor introducing the topic each week, developing the theme along his or her own lines, raising points for discussion (the self-assessment questions (SAQs) are so designed) and giving guidance on follow-up reading.

(3) The SAQs could be used as potential topics for discussion as essay topics (with appropriate guidance on reading) or as small individual or group projects.

(4) Opportunities exist for documentary source appraisal (on *History*), textual analysis, poetry reading and drama (on *Literature*) and such activities would clearly extend greatly the students' study experience in either *Guide*.

(5) Tutors using the material should be prepared to extend the debates and discussions raised in the *Guides*— both of which cover the "facts" — but are also "problem centred", dealing with debates and controversies in both Scottish history and literature.

(6) Updating of bibliographies is clearly important and this can be done in giving guidance on further reading.

(7) The *Guides* could be used in tandem, providing an excellent introduction to *Scottish Studies*.

(8) Finally we welcome comments on the *Guides* and news of how they have been used (and received) by individuals and study groups. This will help us improve the materials in the future.

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and enthusiastic. This helps create the climate conducive to learning. According to Baath (1976) motivation is often created through the dialogue and feedback between the facilitator and the learner.

EVALUATION STRATEGIES

Evaluation in distance courses must take into account the andragogical principle that the learner must be responsible for individual progress. Learners should be encouraged to reflect on their learning performance and on the underlying beliefs they hold about learning and teaching.This implies that there must be an element of self-evaluation in all work submitted by the student, and the learning guide should facilitate this. The keeping of a class journal during the teleconferencing course is one andragogical tool which can be used to encourage reflection and decision-making based on the professor's presentations, the course readings and the discussions.

STUDENT MANAGEMENT SYSTEMS

In the distance delivery of courses, some traditional application and registration procedures, as implemented on-campus, prove a major problem; for example, deadline dates for applications. New and innovative approaches to these long-standing traditions have been experimented with. A new telephone registration system instituted by the university allows a students to sign up for credit courses from any location.

ENSURING ACADEMIC RIGOUR

Pressures to maintain academic standards are prevalent and important. Also, distance delivery of university-level courses is met with skepticism by many academics. Hence,it is important to look at the meaning of quality and the factors which lead to positive learning outcomes for students in distance as well as other programs. The concept of quality is always an elusive one and difficult to define and describe. Is it the number of hours spent in a classroom listening to a professor? Is it two-way communication — the interaction between professor and student? Is it the amount of independent reading and thinking about the subject done by the student that makes the difference? How important is the role of the professor in motivating and stimulating the student to think critically about the subject? What environments are the most conducive to learning? What is the role of affective factors in the teaching–learning situation? It is clear that there are many difficult questions and few easy answers to questions about the quality of the educational endeavour.

These issues have been addressed at the University of Alberta by implementing an annual instructional review process, keeping comparative data with the regular on-campus course offerings, and through extensive gathering of student feedback. The protectionist fears of many academics would require us to do much more.

INSTRUCTIONAL REVIEW

Course content, materials and presentation need to be reviewed and modified after each offering. The University of Alberta has been conducting extensive research on distance education and particularly on educational teleconferencing. Results of this ongoing research have helped to improve the delivery of courses. Consideration has been given to ways of eliciting student feedback regarding content, delivery etc. on both a formative and summative basis.

COMPARISONS WITH TRADITIONAL OFFERINGS

In the programs developed thus far at the University of Alberta, students in off-campus centres receive the same courses of instruction as those students who are studying on the main campus of the University. In many instances a group of students in the classroom with the professor at the main site interact with students at other sites off-campus.

SUPPORT MECHANISMS

The three academic facilities offering programs of distance education at the University of Alberta have come to realise the importance of support for students and faculty embarking upon teleconference teaching and learning for the first time. The fact that sophisticated equipment provides the vehicle by which the instruction takes place, may be intimidating to some. Even more problematic may be initial start-up problems and systems failures. To faculty and students who have had no previous experience with other than face-to-face teaching-learning, the frustration that accompanies a situation where difficulties have arisen with the bridge, the telephone lines or local equipment in centres may seem overwhelming. Therefore it is important to plan for ways to allay fear and anxiety in both students and professors in order to facilitate the success of courses and programs.

AT THE UNIVERSITY

At the University of Alberta, we have found that a support network for faculty is a key ingredient for successful courses and programs. From the point of view of the faculty member, a teleconference technician has been an important part of this network.

When computer-based transmission was initiated, it was decided to hire a technician to work with the equipment, prepare graphics for faculty and teach faculty and students about the use of the equipment. This decision was made when the faculty enlarged the scope of its operations to include the use of computers and telewriter software. Although the use of the equipment is not particularly complex and can be mastered by anyone, the importance of having a technician prepare the instructional materials for use during the class and have the equipment up and running when required has been reinforced over and over again by those who have used the equipment for the first time. The most important result of having a competent and responsible technician may well be in allaying the fears and anxieties experienced by those new to the method and the equipment. Unless those who are to use it develop a belief that they can do so successfully there will be difficulties.

The collaboration with other departments, faculties and institutions concerning scheduling, the availability of telephone lines and bridges, arrangements to transport the equipment from centre to centre as necessary and mailing disks to each centre to be down-loaded onto the equipment for use in class all take considerable time and effort. It is thus essential to have someone designated to assume responsibility for these functions, that is a program co-ordinator.

AT RECEIVING LOCATIONS

Facilitation at the various receiving sites is of paramount importance and has been addressed by various positions such as Local Teleconferencing Aide (LTA) or Local Program Facilitator. Whether the responsibilities are held by one person or more, we have identified three facilitative roles to be of importance:

(a) technical facilitation,
(b) administrative facilitation, and
(c) learning facilitation.

In some instances students within the class have been able to fill one or more roles.

Technical facilitation involves the scheduling of rooms and equipment, setting up and testing the communications equipment.

Administrative facilitation ensures liaison between the university and the learners, attends to application and registration forms, communications, program counselling, distribution of materials, publicity, collection and mailing of assignments, as well as providing for the proctoring of exams. This role can be especially helpful, if it is clearly understood that part of the role is to foster positive relationships between students and faculty and to report any difficulties to the professor.

Learning facilitation is required to provide for some of the duties normally expected of the instructor but which are difficult if not impossible from a distance. This role includes: advance in class activities, the direction of activities and discussions that follow teleconferencing sessions, as well as motivating and encouraging the learners within the learning process outlined by the professor. Particular attention needs to be paid to the design of the materials to be utilised; facilitators (teachers, local program facilitators or students) need to receive training in teaching and learning through this mode, particularly in relation to their functions of motivating and giving adequate feedback and the importance of group dynamics. As a result of this approach to distance education, Faculte Saint-Jean has achieved the highest student retention rate possible — 94–100 per cent of the learners complete their respective courses successfully.

In general it can be said that facilitators seem to fulfil their role most successfully when they are hired by the academic unit offering the particular educational session in question.

A SUMMARY OF COURSE AND PROGRAM DESIGN PRINCIPLES

(1) Collaboration among faculties and with other institutions.
(2) Team development of courses.
(3) A variety of learning strategies.
(4) Attention to student learning styles.
(5) Provision of learning guides.
(6) Facilitation of student group activities.
(7) Instructional review.
(8) Course and program evaluations.
(9) Support mechanisms at sending and receiving sites.

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A new adult student: learning by interactive satellite

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ABSTRACT

Modern communication technology is being applied more extensively in continuing education. The article asks whether adult students receiving their learning experiences by modern communication technology differ from those who receive their education by traditional delivery methods.

LEARNING STYLES

The introduction of new teaching technologies raises the question of whether different learning styles are needed for students to cope. Within any evening class, students respond differently to the same instruction. Often differences in response relate to the cognitive styles of the learners (Wittrock, 1980). Some individuals may be convergent thinkers while others are divergent thinkers. For the former, thinking is directed towards finding the one "right" answer. In contrast, for the latter, thinking branches outward in several directions and no single right answer will be sought or found.

Pask (1976) classifies adult learners into two distinct groups "serialists" and "holists". The serialist learner is one who is a low-order worker who operates in careful, ordered steps to reach a conclusion; the holist is a high-order thinker who works downward from an overall conception of the field, rather than upward in a series of incremental stages. A similar classification system distinguishes individuals as being "inductive" and "deductive" learners. The inductive thinker works from examples towards a general thesis statement or conclusion; the deductive thinker works from a general statement to the particular.

The implications of these research findings for educators is that thinking and learning styles can be differentiated and instruction sometimes improved by matching learners' cognitive styles to appropriate methods of presentation and to the type of mental elaboration that the learner employs. It may be the case that learners have not one but many styles and strategies for learning and that they move amongst them as the task demands.

Recent advances in communication technology have extended adult education activities especially for people who reside at a distance from post-secondary institutions. This new adult student is more autonomous than his or her on-campus counterpart and is potentially at greater liberty to employ the learning strategy considered appropriate for the tasks to be accomplished. However, adult learners with "rusty" learning skills and who lack the support of a peer group and informal contact with their instructor, may experience difficulty in establishing their preferred learning style, or in deciding which method is best suited to the particular problem.

METHODOLOGY

We know very little about how adult students are coping with the new distance education courses being offered by modern technology. Are the programmes attractive to certain individuals and not to others? What new learning skills must students acquire to understand the information delivered by certain modes of communication?

Do more or fewer students complete the new types of courses than in traditional ones? Does the manner in which information is presented by the new media have a significant impact on learning? These are a few of the questions to be researched.

The investigation described in this report was undertaken to study the impact of modern communication technology on the distance education system evolving in British Columbia. More specifically, the enquiry addressed two specific issues, namely:

(1) the effect the new technologies were having on the educational experiences being offered to

adult education students by provincial universities; and

(2) the impact the new technologies were having on the organizational structure of provincial universities.

To facilitate analysis and to arrive at some tentative conclusions regarding these important issues, the scope of the investigation was restricted to studying the satellite-based, live interactive, television programmes broadcast by the Knowledge Network for the University of Victoria. The issues were delineated to several subsidiary areas. Of the educational experiences offered by courses, the process (teaching and learning) and product (content) were given separate consideration. The organizational structure was viewed as consisting of internal and external functions.

During 1982, two exploratory studies were completed at the University of Victoria to discover what impact the introduction of communication technology was having on the educational experiences being offered by the post-secondary institutions of British Columbia. The first enquiry, coordinated by Haughey and Potter (1983), examined the principles and practices of teaching by television. The second study, a survey supervised by Forsythe (1983), reviewed how modern technology was being integrated into the higher education system of British Columbia. The findings and conclusions of this survey were included in a report commissioned by the Organization for Economic Cooperation and Development (Collins and Forsythe, 1983), which described how contemporary communication technology was being utilized by educational institutions in various nations. Data banks established for these studies served as the information base for the investigation under discussion.

The data included in the banks was obtained from many sources. Professional literature on learning theory, communication theory, adult learning through educational television, visual literacy and experiments with communication technology were reviewed and important findings, theories and concepts noted. Government documents, research reports and unpublished manuscripts on the distance education system evolving in British Columbia were examined and important facets of the developmental process recorded. Similar documents were obtained from other provinces of Canada, the United Kingdom, the United States and Australia for comparative purposes.

Face-to-face interviews were completed with senior government officials, educational administrators, university scholars and adult educators associated with or interested in the development of educational experiences by the new modes of communication. A small group of adult students, who had been involved in one adult education course were interviewed by telephone. Evaluation questionnaires completed by students enrolled in one of the first new distance education courses were reviewed and comments directly related to the issues being examined noted. A selection of video-taped broadcasts were viewed and analyzed using a set of criteria established for this specific purpose, drawn from the professional literature.

After the data for the investigation being discussed in this report had been summarized and organized for review, it was analyzed using an illuminative evaluation approach developed by Parlett and Hamilton (1972) for studying innovative programmes. Data from a variety of sources is cross-checked to establish information profiles for the examination of the issues under scrutiny. The aim of illuminative evaluation, according to Parlett and Hamilton, is "to sharper discussion, to disentangle complexities, isolate the significant from the trivial and to raise the level of sophistication of debate" (p. 2).

The relationships among institutions usually change as a consequence of a substantive intervention. Pask's (1980) Conversation Theory served as a conceptual framework for examining the changes which occurred in the relationships among institutions by the creation of the Knowledge Network. One of the principal mandates of the Network was to nurture greater cooperation and collaboration within the British Columbia post-secondary system. Most provincial institutions of higher education, have endeavoured to take advantage of the new technologies without relinquishing a significant amount of self-governance or autonomy. The term "co-operative individuality" is often used to describe the balance between the shared and autonomous aspects of the relationships among institutions. This balance is not static but is a dynamic evolving structure which can be easily disturbed by planned or unplanned interventions. The Knowledge Network, as Collins (1983) points out, established a creative tension among institutions involved in the new distance education system. Pask's (1980) Conversation Theory provides an effective framework for studying this phenomenon.

FINDINGS

The television broadcasts and printed matter reviewed suggests that the focus of instruction was on content. All instructors appeared to be primarily concerned with providing students with knowledge about a specific subject. Learning packages were comprehensive, detailed and well produced. Generally, minimal attention was given to encouraging reflective thinking, creativity and further enquiry. Several students commented upon the comprehensiveness of the programmes which they perceived could produce information overload. Most of the students, however, did appreciate being provided with learning packages prior to broadcasts commencing. By possessing material in advance, students were able to read over professional literature at their leisure and acquire an overview of the subject being studied.

There was general consensus among the respondents that the university lecture format was inappropriate for satellite broadcasts. Even if the presentation was interesting, students quickly became bored and inattentive. Many instructors dominated the learning environment by speaking for most of a broadcast. This situation occurred as a consequence of a number of factors. Owing to insufficient preparation for the television, instructors tended to employ teaching methods, evaluation procedures and assignments which they had used successfully in a traditional unversity classroom setting. Like new teachers, many instructors were concerned they would not cover all the material in the time available. Fear of failing to deliver sufficient information meant instruction often occurred at a rapid pace.

The students generally did not participate in television discussions; which only encouraged instructors to control the learning environment and to cover as much material as time permitted. Why didn't the students interact with the instructors or with each other? Dialogues with the students, instructors and coordinators seemed to indicate that most of the students were "professionally shy". To speak in a public arena is not an easy talk for most people. A number of the students who commented on this subject reported that they were embarrassed to voice their ignorance on the television network.

Early in a series of broadcasts opportunities should be provided for students to gain confidence and experience with the media. Not all students want to speak during a broadcast. Several students emphasized that they had no desire to participate in conversations because they possessed a good understanding of the material presented. They thought some dialogues a waste of time. Without appropriate control, some students can use a distance education course as a platform for expressing their personal biases.

Under these conditions, instructors who take a cognitive approach to teaching encounter difficulties. When in a counselling programme an instructor endeavoured to explore alternative ways of coping with psychological issues there was a minimal response from the students. Similarly, attempts to encourage students to develop skills of "learning to learn" were only marginally successful. Neither the printed matter nor the learning climate were conducive to a cognitive approach.

The majority of the instructors possessed minimal knowledge of the students they taught. Prior to the broadcasts, instructors were rarely provided with any information about their students. This situation is common in a traditional university lecture setting and appears to create few problems for instructors. Such an observation may or may not be true. Perhaps, faculty members who teach regular on-campus classes would welcome more information about their students. Research needs to be undertaken to examine this issue.

Insufficient information about students is a serious deficiency for distance education instructors. When instructors did endeavour to discover more about their students, such enquiries were very welcomed. Recently, this situation has been improved by encouraging students to participate in teleconference calls, to telephone instructors for assistance, to contact counsellors and to use information lines.

Modern communication technology possesses the capacity for presenting material visually as well as verbally. Film animations, video inserts, role play and analogies can be effectively employed to explain concepts, to discuss issues or to report research findings. Verbal language tended to be the primary method of communication in many early broadcasts. Minimal use was made of visuals in any form. Discussions with administrators and distance educators revealed that many instructors were perceived as being visually illiterate. Also, instructors usually resented technicians giving them advice on how to present material. Requests to "smile" and to look "aesthetically pleasing" were not received warmly.

Production managers are aware of the need for programmes to be technically well-produced and professional looking. Adult students do not expect educational programmes to compete with commercial television but they anticipate that broadcasts will be well produced. The interviews indicated that instructors, technicians and distance education coordinators needed to discuss their differences so compromises could be reached. Recently, project teams have been established to produce programmes which has reduced the tension and resentment among production staff.

Many of the technical problems associated with early broadcasts have been eliminated. One human factor which continues to generate problems for a production team is the ability of an instructor to project a warm and friendly personality through the medium. Students seemed to respond much better to presentations, according to many of the individuals interviewed, if instructors were relaxed and personable when teaching on television. As one coordinator noted, it would appear that a special type of scholar is needed to teach by the new medium. The selection of instructors may have to be undertaken with greater care than that given at the moment.

COMMENT

Recent applications of communication-technology at the post-secondary level have shown it to possess great potential for offering adults in non-urban areas a multitude of learning experiences. If contemporary modes of communication are to attain their potentiality, more consideration must be given to the special needs and unique characteristics of the new adult distance education student, and of the medium itself.

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Resourcing distance education for rural identity

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There is a risk that policy makers and administrators of education systems become patronising and paternalistic when they seek to overcome perceived educational problems existing in rural areas. In the wake of what has come to be called "distance education", what is often sought after in the application of technology in remote schools is a more equitable sharing of resources. What may be overlooked are the second-order consequences of government actions. There are potential dangers associated with government intervention in any society, especially the rural sectors of societies. Because of their isolation, the rural sectors of society are very susceptible to change from metropolitan sources — sometimes trading off worthwhile things in their community for what they perceive as improvements emanating from the cities. Since all educational enterprises are interventions with the ever-present danger of becoming intrusions, it is crucial that the recipients, especially those in the rurál sectors, are aware of what they are trading off and what they are receiving in return. This paper is not advocating an anti-technology stance, but is alerting the reader to some issues which we believe have not been debated sufficiently either by those who implement distance education programmes or those who would like to see a body of research built up around distance education.

The approach used in this paper is to place technology in a cultural context. Cultural purpose will determine content selection, processes, strategies, resources and methodologies. If the cultural purpose is seen to be shared value and retention of an identity of a community which is rural based, within a wider national cosmopolitan framework, then content, processes, strategies, resources and methodologies will fall into line. It is argued that this approach can provide some substantive criteria for the selection of appropriate technology and guidelines for the widespread application of that technology in rural schools.

For ten years, the Country Education Project in Victoria has been seeking to redress rural disadvantage by using technology to provide better education in small schools (Conboy, 1982). The key feature of the Country Education Project philosophy has been its emphasis on local participation and decision making. "In the Australian context, some of the most vital rejections of such a centralist and arbitrary philosophy have come from rural people in isolated areas. The irony is that, while rural people are systematically disadvantaged by an urban-orientated, academic curriculum, they are also remote from the central power bases that they can and do, indeed must, adapt the curriculum to make it more locally relevant. Country people have a direct honesty that sees through academic pretence, that reveals the absurdity of teaching the same things in the same way in every part of the nation, that defies attempts at arbitrary control. Yet they also often lack the confidence, the organisational know-how, the ability to articulate their ideas, those forms of competence necessary to a successful rejection of education that is not locally relevant" (Edgar, 1979, 99).

At the heart of the Country Education Project process is the belief that education is much wider than what happens in schools. Educational disadvantage grows from community isolation and to remove that disadvantage we must work on the total community. "We believe that it is political know-how that counts, a sense of efficacy as people acting in the real world". (Edgar, 1979, 103).

Giving people responsibility for making decisions about the education in their community will partly ensure that the decision makers have access to some of the information on secondary consequences rather than information solely about whether they are achieving primary goals. Education is a cultural enterprise which is concerned with continuity and change. These are handed down and developed. Purposes are derived from the historical culture of Australia. Therefore, education is not entirely conducive to democratic processes at every point in the formulation of its aims and its decision making processes.

TECHNOLOGY AND RURAL IDENTITY

A more pressing concern, at least in the short term, is the threat of communication technology to the autonomy of some schools and their communities. Generally, we are aware of the more prominent characteristics of rural cultures — the greater emphasis on personal relationships, stronger religious and kinship affiliations, and stronger commitment to communities in general. This is reflected in rural education with parents in general having closer contact with their schools particularly at primary levels. This generic type of culture has been discussed in relation to ethnic minorities in Australia (D'Cruz, 1986). This analysis is valid for rural cultures. After allowances are made for differences in degree, even kind, there are strong similarities between the cultural orientation of those sectors of Australian society designated as rural and as ethnic. Lived culture can be classified as either concrete or abstract. In more concrete cultures, there is emphasis on the group as distinct from emphasis on the individual which is found in more abstracted cultures. Autonomy and independence are valued more in abstracted groups, while a sense of belonging and interdependence are valued higher in concrete cultures. It is important for rural communities to know (by surveys, discussions and inventories) what exactly characterises their distinctiveness vis-a-vis the urban centres and other rural centres. Otherwise they will not be in a position to assess the nature and extent of changes that education and/or technology may be contributing to in their midst. There is a danger of being carried away by the promise of technology and distance education to deliver education to large numbers of learners, freeing them from the trammels of space, time and age (Yu Xu, 1985, 96). This is a recipe for an abstracted culture with no sense of history or locality. What might be seen as providing flexibility to a labour force may give rise to a range of social problems when people in traditional cultures are removed from their communities. Yu Xu mentions the problem in China of a mismatch of TV college graduates and the type of work they are expected to do (Yu Xu, 1985, 102).

In general, Australian education systems have made little distinction between urban and rural schools. The Listening and Responding Report (1983) prepared by the Education Commission of New South Wales indicated that there was a need to acknowledge the validity of both rural and urban heritages. There has been little attempt to capitalise on some of the positive features of rural schools. Any intervention in rural cultures runs the risk of destroying "the concrete and exclusive kinship ties and its concomitant ideology of personal service and group loyalty of an extraordinary extended kind involving groups that at best could only be intuitively known" (D'Cruz, 1986). The current Victorian project, Commonwealth Resource Agreement: Using Technology to Improve Retention in Years 11 and 12 in Rural Schools presents a challenge to educational planners. It is a centralist intervention implemented by small schools. In order to become something other than a centralised initiative, considerable care in planning is necessary to prevent the second-order consequence of the loss of rural autonomy emerging.

Generally, there appears to be disillusionment in the community about education's use of resources and governments now are less willing or unable to make funds available without constraints attached to how they will be spent. This is not necessarily and altogether a bad thing. Reduced resourcing will encourage individual schools to look to other schools, to their communities and industry generally to supplement their resources.

HUMAN RESOURCING

It is our contention, and that of others, that the most important resource available to the learners in a distance education system is teachers (Kaushal, 1985). It seems logical to develop resources already in existence rather than rush headlong into trying to use new resources which may not be appropriate in the short term. There appears to be a shortage of preservice courses throughout the world to train distance education teachers in planning, designing, writing and editing course materials; in using audiovisual materials as supplements to written materials; and in developing dialogue with students in distance education modes. There is only one tertiary course in Victoria, the Graduate Diploma of Educational Technology offered by Victoria College-Torrak, which addresses these issues. Some content is picked up in courses provided by other institutions but in general, tertiary teacher training institutions have been slow to teach graduates skills such as interacting with students in the distance education mode. One reason at least in the Indian context and most likely Australia as well is that decisions about distance education are taken by senior university staff in traditional institutions and imposed on distance learning institutions (Datt, 1985). While the resource Agreement has encouraged regions to liaise with local tertiary institutions and some progress has been made (Bendigo College of Advanced Education are investigating introducing a course in distance education and have requested access to the communication technology in schools), the Ministry of Education needs to take some central initiatives in this area.

COURSE AND SOFTWARE RESOURCES

Some writers regard high quality software as the most important resource in distance education. It is argued that at least for computer-assisted instruction and probably film and television as well, it is the shortage of adequate software which has prevented educational technology achieving its full potential (Levin and Meister, 1985). In the past, the focus has been on the equipment rather than on software and other requirements for providing educational services. Firms are inhibited from undertaking investment in software because of a lack of market information, and the need for large amounts of initial capital. The decentralised nature of school purchasing decision, the range of equipment in schools and illegal copying are further difficulties. Schools are inhibited from making decisions about buying software by a lack of clear adoption policies and an irregular funding base.

Because computers at this stage of their development process data and information more effectively than abstract concepts and theories, there is a tendency to concentrate on their administrative function rather than their educational role. There is an understandable tendency for some developers of computer systems to see curriculum uses as complex and confusing. If education systems are to develop adequate amounts of instructional software as distinct from administrative software, then incentives must be provided for teachers to design the materials and make them freely available throughout the system. The Victorian Resource Agreement is establishing an Electronic Curriculum Materials Library which will be a facility for teachers to deposit materials they have designed and found effective, and for other teachers to access for their own classes. Because most private firms are unlikely to take the risks to develop software, strategies and administrative structures like this Electronic Curriculum Materials Library must be developed to encourage education systems to produce education software. It is at points like this that technical innovations like VISTEL, as a support system, could be crucial in the transmission and spread of what has been deemed desirable in the areas of curriculum, culture and understanding. While undoubtedly we see the potential of VISTEL as a support system, some worrying aspects of its full effectiveness in regard to rural schools remain.

While we accept VISTEL's potential efficiency in terms of transferring and receiving feedback between the cosmospolitan centre and the rural centres, its ability to develop and even generate intercommunication between the rural centres themselves has yet to be demonstrated. An issue here has to do with the tendency of technical systems and processes to create patterns of dependency and lack of autonomy through their very effectiveness. Rephrased, the question is, would a stunningly effective device eventually determine, even dictate, the types of social and other relationships that is possible and desirable within the wider community that is Victoria. Our hunch is that people in rural regions are far more interested in talking to each other than they are in listening to their metropolitan counterparts — a tendency that might be a justifiable defence mechanism to retain the integration and identity of rural communities against continual onslaughts from the metropolitan and cosmopolitan thrusts of individualism.

INSTRUCTIONAL SETTINGS

The most neglected aspect of distance education and a potential resource is its instructional settings. These can vary enormously — individual homes, hospital beds, prisons, the many work places and in the case of the Victorian Resource Agreement, post-primary schools in small rural towns. Ten years ago the Country Education Project began to appreciate the importance of communities in assisting the education of children and ensured that it had community representatives on all its committees. We have addressed the importance of rural communities elsewhere (Conboy and D'Cruz, 1987). The present Resource agreement will provide communication facilities in schools which will be available to the community in non-school hours. Such a facility should bind the community closer to the school and bring groups other than parents to the schools. The potential for mutual benefits from such an arrangement are considerable. Rural schools are largely staffed by teachers who have no close cultural links with the area in which they teach. While they bring a beneficial range of skills to a rural community and give country children insights into a world beyond the confines of their community, they do not have the benefit of a lifetime of personal interaction within the community in which they work. They may exist as an intellectual island in some rural communities and any development which brings them closer to their community should be encouraged.

CONCLUSION

While there is a greater emphasis on using technology to develop a more highly skilled and versatile workforce to achieve largely economic goals, planners should not lose sight of the cultural context in which these changes take place. This is particularly relevant in some of the more vulnerable and disadvantaged cultural groups such as the poor and the isolated. In the face of declining educational resources, planners should ensure that funding is available to develop links between teachers in other schools and between schools and their communities. The Country Education Project has provided the model for these links in rural areas. Technology will transfer expertise and locally produced education materials readily to all schools. We need to develop frameworks for this co-operation and use technology for linking the network together. It is only through such co-operation between regional schools in the rural area that sufficient educational resources can be available for children who live and learn at a distance. The criteria for expenditure have to meet the two not-negotiable needs (with whatever else may be considered): firstly, the need for appropriate technology promoting a desirable educational context for the teaching and learning of students in more distant parts of the state; secondly, the further need to promote and develop educational and social interaction of clusters of schools in the regions to enable them to provide each other with mutual support in their attempt to retain their rural cultural identity.

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Students supporting students – a personal perspective

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Throughout New Zealand, important liaison work with extramural students is done via the Massey University Extramural Students' Society's network of volunteer Area Communicators. Predominantly extramural students themselves, these volunteers play a significant role in supporting students at a local level in the regions of New Zealand where they live. To provide effective assistance these supporters of other students must be supported too. In recognition of this need the Extramural Students' Society invited Communicators to Massey University in November 1985 for the first on-campus training workshop.

This paper describes the students' support network, the role of the Area Communicators and the effectiveness of the workshop in improving skills and providing support.

As the major provider of distance tertiary education in New Zealand, Massey University caters for extramural students throughout the country. The extramural programme offers 400 separate papers which may be credited to a range of 10 degrees, 20 diplomas and 4 certificates. Massey is a bi-modal multi-faculty university; the extramural courses are correspondence counterparts of internal courses taught by the same staff and assessed in the same manner. Most students are able to complete a qualification through Massey University entirely through extramural study.

It is difficult to identify the typical extramural student. Extramurals range in age from 17–70+, and come from a diversity of backgrounds and occupations. They enter extramural study with varying needs and many need encouragement to gain confidence, and assistance to develop the necessary study skills. I enrolled at Massey in 1979 on "provisional admission", that is, like approximately a third of all enrollees, I did not possess a recognised enrolment qualification. Over the next six years, all but one spent as an extramural student, I studied for and completed a Bachelor of Arts degree in History. In the process, I gained considerably more than I anticipated. My initial uncertainties rapidly changed to become an ongoing, challenging and deeply satisfying learning experience with gains in many aspects of life beyond just academic achievement.

When asked in 1982 if I was interested in joining the volunteer student support network administered by the Extramural Students' Society, I readily agreed — pleased to be able to return something of use to the system that had given me so much. Today almost 60 Area Communicators, along with 15 contact people, act as resource people for students in their areas. As well as putting students in touch with each other (making use of the Area Class Rolls provided for them by the University), Area Communicators provide a sympathetic and understanding ear, as necessary. Often more practical advice is needed: when to enroll? where to buy text books? how to find sufficient time in a busy day to study? Area Communicators often provide the first point of contact when problems arise and information and/or support is required. The needs of students are many and varied and the empathetic response of Communicators can help students over the hurdles of studying at a distance.

For Communicators, contact with students is usually by telephone, with occasional home or work visits, plus two or three area group meetings each year. For me, the benefits of being an Area Communicator outweigh the time spent on the telephone and, on occasions, the disruption, of my limited free time. Not only have I met many interesting people, some of whom have become valued friends, I have also gained effective listening and communication skills. During the two years I spent as a *full*-time student, when it was necessary to reduce severely outside activities, the ongoing contact with other extramural students provided me with valuable support and social contact. Of immense practical benefit was the ready access I had, through my frequent contact with other students, to study aids such as secondhand text books, study groups, and helpful background information and opinions concerning specific courses.

Unlike most other support networks the Massey Student Society model operates independently of the University and is funded entirely by the Extramural Students' Society. Most of the Area Communicators are, or have been, extramural students and it is this concept of students supporting students that is the unique feature of the support network. Student initiative conceived the network, as shown by Williams and Williams in their ICDE funded research project "The Evolution and Function of a Student-Operated Support Network for Distance Students":

> Many (students) felt the need for readily available support to compensate for their isolation and initiated local activity by organising study groups amongst students studying the same subject.
>
> (Williams & Williams, 1985, p. 6, Report)

Later the Society accepted the responsibility for the establishment and maintenance of a network of volunteer "Area Communicators" throughout New Zealand. The main responsibility for developing and servicing this network fell on the shoulders of the Society's newly appointed Liaison Officer, Barry Buckton, in the late 1970s, and in 1983 passed to his successor, Maureen Williams.

There are advantages in using students, rather than University employees, to support other students: a sense of identity and empathy results from group membership — Communicators and students meet on an equal basis with Communicators being able to offer advice and support built on a common experience. Or, as one Communicator summed it up:

> My assurances and advice is seen as kosher because I'm handling it... the same conditions they have to face.
>
> (Williams & Williams, 1985, p. 35, Report)

Furthermore, as Meacham (1984) points out, "contact with peers serves a socialising function" and the aim of student support should be to help students develop "a view of learning which is satisfying to the individual and acceptable to the institution".

But, in order to provide effective support for other less experienced students, Communicators need supporting too. A recommendation from the research report, "The Evolution and Function of a Student-Operated Support Network for Distance Students" was:

> That the Society should investigate further the need for training for Area Communicators, and the form such training should take.
>
> (Williams & Williams, 1985, p. 62, Report)

A questionnaire, to gauge interest, was sent to all Communicators and responses indicated a clear preference for a weekend seminar. Although ongoing support was available in the form of regular newsletters, on-campus meetings during the vacation courses, and bi-ennial visits to all areas by the Societys' Liaison Officer, Communicators wanted an extended opportunity to meet. To quote one:

> I would really appreciate a time not associated with vacation courses when roles, contacts, administrative aspects, etc could be discussed.

In response to this demand, the Society invited Communicators to Massey University for the first on-campus training workshop in November 1985. Over two days, forty four Area Communicators and contact people gathered with University staff and auxiliary personnel to exchange information, share experiences and revitalise enthusiasms. All costs for the weekend were met from the Society's funds.

For me, the greatest benefit of the weekend was the interaction with and shared learning between Communicators. The frequent discovery that others shared similar experiences helped to lessen my own sense of isolation. Areas vary in size and student numbers, and have different needs and resources. For example, Dargaville has about 40 students spread out over approximately 100 kilometres, while my area of Hawkes Bay, roughly comparable in size to Holland, has two Area Communicators to cater for approximately 700, predominantly urban students (1987 figures).

Qualities of an effective Communicator were discussed, and again it was emphasised that more important than "expertise", are qualities such as approachability, being a good listener, and a basic familiarity with and understanding of the demands of extramural study. The limitations of the role were stressed, much to the relief of some Communicators, who felt inadequate in the shadow of a few highly active others. Yet as one Communicator expressed it:

> I think it is important for us to realise that we are just Communicators and not mini Masseys all over the nation.
>
> (quote from workshop transcript)

Another summed up the role as: "Commonsense based on experience".

The two days spent together, and away from all other demands, helped foster a sense of belonging: of group membership and identity. It was also a chance for University staff, both teaching and administrative, to explain their individual roles, concerns and future plans. Communicators were brought up to date on the functioning of the University system and given a clearer idea of the best person to refer an individual student to when problems arose. It was also an opportunity for Communicators to explain *their* roles to University staff, and to emphasise that, as student volunteers, they should not be expected to perform tasks for staff that should be the responsibility of paid, University officials.

An ongoing issue over the two days concerned the most effective way of informing students of the support network. While Communicators can, and at times do, initiate contact with individual students, this is too much to ask of Communicators on a regular basis, especially in large student populated areas. It was agreed that, ideally, *students* should initiate contact with Communicators, and that the high withdrawal rate might be reduced if students experiencing difficulties contacted Communicators before problems overwhelmed them. How to encourage contact was the major issue.

Of the many options discussed, two have since been put into effect while others are still being considered. One is an information sheet comprising the first page of the Students' Society Newsletter, outlining in clear, concise language what the Society's Area Communicators can do for students. I especially like the final statement, which follows on from a comprehensive list of ways in which Area Communicators *can* assist students. It reads:

Your area Communicator *cannot*
a. Act in any capacity as an officer of the University
b. Sit your exams for you (tough).

Approval was given by the Management Committee to the suggestion that funding be provided to allow Communicators to send introductory letters to new enrollees in their areas. Sent at the start of the new year, these letters introduce the Communicator and outline the resources available, with perhaps an invitation to a forthcoming meeting. The effectiveness of these letters as "icebreakers" can be seen in the increased numbers of students attending area meetings. For example, attendance at the regular February meeting in Hawkes Bay increased about 20% over previous years to about 70 students, the majority of whom were first year students.

To increase knowledge of the services the Society provides, a poster has been produced and bookmarks, bearing the words "We Support You", were included with the Society's introductory Newsletter in 1987. For the future, a publicity pamphlet is planned.

Those attending the weekend workshop also supported two proposals to give students greater opportunity to voice their opinions and concerns. One is the Comments Book now available at on-campus courses in which the students can record both positive and negative comments. These are later collated, and conveyed to the appropriate people by the Society's Liaison Officer. The second innovation has been the awarding of merit certificates to staff nominated by students as being particularly effective. These merit awards have been well received by all recipients and have an added value, as the Society publicises in the University's staff newsletter and in the Students' Newsletter, the list of recipients and the reasons *why* they were deserving of recognition. Thus, there is an increased awareness of the needs of extramural students.

But what of the future? The first Communicators' Workshop fulfilled expectations and another was held in November 1987. For new Communicators, this weekend should provide an invaluable introduction to the role. "Old hands" will be able to share knowledge and develop some new skills. The Society's support system depends on the sharing of experiences amongst its members.

The Extramural Students' Society's support network was initiated by students to compensate for the isolation of distance education and the lack of any formal regional support. An interesting development in recent years has been the University's move to decentralise its services away from Palmerston North by developing its own support network of Regional Course Advisers. To date, four regional officers have been employed to act as official representatives of the University on a part-time basis. Some University Departments, such as Nursing Studies, Education, History and Sociology, also employ part-time Regional Tutors to assist their students. These three services — the Society's Area Communicators, University Regional Course Advisers and Departmental Tutors — have a common objective, which is to bridge the gap between the University and the student; to provide help *when* and *where* it is needed. However, the Extramural Students' Society, through its Area communicators, can give the kind of support not possible from paid representatives of the University. As Sewart (1983) pointed out, there can be a "barrier to rapport and trust" on the part of individuals who are employed by the Institution. Area Communicators *truly* represent the interests of students, being, or having been, students themselves.

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Developing Scottish studies for distance education

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This paper describes the design and development of course materials for Scottish Studies — history, literature and culture — by the Open University in Scotland. The Scottish Studies Project sprang from the desire of faculty in Scotland to develop teaching material with a specifically Scottish content, since UK-generated courses for both undergraduate and continuing educational levels — almost inevitably — are concerned with wider issues. Scotland has a unique history, culture and institutional development which has for long been recognised in school, college and university curricula — though sometimes with the same degree of "cultural cringe" which typified the more recent discovery of, say, distinctively Australian Studies on the other side of the globe.

While the majority of the conventional universities teach Scottish History and Literature and a few more specialist topics or periods; while there is considerable international interest especially in the United State and Canada; while there are several research institutes, such as these at Edinburgh, Aberdeen, Old Dominion and Texas (U.S.A.) and Guelph (Canada) devoted to the subject; and while many university extra-mural departments offer classes in Scottish Studies, until 1986 no attempt had been made to offer a broadly based course by distance education (DE). The success of the OUS Scottish Studies Project has however led to the subsequent development of Master's Degree programmes in Scottish Literature by distance education at the University of Glasgow, and several co-operative enterprises between the OU in Scotland and other institutions such as the University of Edinburgh and Langside College, Glasgow.

The Scottish Studies Project began in 1980 when a group of academics at the Open University in Scotland met to discuss the development of a course on Scotland, designed for the OU's rapidly expanding continuing education programme. An ambitious scheme sought a curriculum that would include study of the environment, history, economy, political institutions, education and culture — emphasising their distinctiveness in the UK context. While this remains a long-term objective it was thought expedient given available personnel and potential resources to look to the short-term development of pilot materials for self-study on history and literature, which could be incorporated in a low-resource strategy. In 1981 a start was made with *Scottish History*.

In a sense the development of the *Scottish History 1560–1980* component was a relatively soft option, given the availability of standard texts on the subject and period. It was decided that the "wrap-round approach" would be most appropriate and that by using four set texts (one of which was a useful reference work) students could be provided with a comprehensive overview of Scottish historical development. But by focusing on a number of key themes and issues a problem-centred approach would let students escape the traditional view of Scottish history as a series of dramatic events (usually involving the English) or an ill-lit stage across which strut the great historical figures of Mary, Queen of Scots, John Knox and Bonnie Prince Charlie. Using the critical background provided by the set books, *Scottish History* — in its modest way — would try to strip the subject of some of the myths which ave dogged new interpretations of the past, notably such major themes as the Reformation, the Union on 1707, the Highland Clearances, or "Red Clydeside" politics during or after the First World War.

Scottish History would therefore cover 16 topics and be designed for study over either a 16-week or 32-week period, depending on the time available to the user. The themes are listed here in the Appendix. Each topic is introduced in a short essay, preceded by a clear statement of objectives and set reading to which the student is immediately directed. The course material then focuses on the main issues and debates, reviewing current thinking where appropriate. The student's attention is drawn to deficiencies in the set texts where such exist and a section on up-to-date further reading provided. Finally a series of self-assessment questions can be used by the student as follow-up exercises. The level throughout was pitched at the intelligent general reader with the continuing education market in mind.

Scottish History was prepared in camera-ready copy for printing and publishing in 1982, and was publicised via the OU system and more generally via the media, libraries and other educational outlets. Some favorable reviews were received and the level of direct sales thereafter encouraged Stage II of the Project, the development of a *Scottish Literature* Study Guide.

As an exercise in the creation of DE material *Scottish Literature* posed several problems. Unlike *Scottish History* for which a range of suitable texts was readily available, standard works in literary criticism were hard to come by, being mostly out of print. Given the format and workload already established by *Scottish History* it also seemed unlikely that a broad sweep of Scottish literature could be encompassed. Would the student be expected to read out of date works of literary criticism and a potentially daunting list of novels, poems and drama in Scots, English and Gaelic? (Some out of print.)

So an early decision on approach and content indicated a series of case studies — some period-based but the majority reviewing the works of the great scottish writers since the medieval era, concentrating on the Modern Scottish Novel and poetry. Most of the works would be readily available in local libraries. The one set text, as events transpired, was soon joined by another — the only modern review of Scottish literature generally available. But the *Scottish Literature* guide was not a "wrap-round" development, because students are expected to read much more widely than the set texts. Conventional wisdom suggested the preparation of a Course Reader incorporating out-of-print texts but this was ruled out on grounds of costs, and the potentially thorny problem of copyrights.

The topics chosen (see Appendix) began with a discussion of early Scottish Literature, the great Renaissance poet, Henryson, the literature of the sixteenth century and that of the seventeenth and eighteenth centuries. Much of this is in Scots so care had to be taken in the selection of texts and to ensure comprehension. This was less of a problem with later themes, the majority being covered by modern editions. Finally, the problem of literature in Gaelic was solved by pointing students to some editions which included English translations; though nevertheless encouraging those with some knowledge of Gaelic to use it and enhance their appreciation of the literature. The approach in each theme followed that already established in the *Scottish History* Study Guide. The development team would be first to admit that there are problems in student usage accentuated by difficulties of access to texts but the feedback to date at least demonstrates that users are encouraged to search out and read many of the recommended texts. Publication took place in 1984 and good sales were immediate and sustained following favorable press coverage and reviews. Tutor notes were produced suggesting how the two Study Guides might be used in tandem (see Appendix).

The third element in the package, *Scottish Society and Culture*, was therefore designed to link the two existing *Study Guides*. It would achieve this by filling in critical historical and cultural background and covering some additional themes, such as art, architecture and educational developments, neglected in earlier course material. It would have no set book as such and although seen as a critical link between *Scottish History* and *Scottish Literature* was also conceived as a stand-alone publication. The format was much as before, with four sections covering culture and history before 1560; Reformation and Union — cultural effects; Enlightenment and Romanticism; and Scotland in the modern age.

Scottish Society and Culture was published in 1986 and was immediately followed by the launch of the *Scottish Studies* open learning pack. Again this was widely publicised throughout the country and favorably reviewed. Sales have been constantly sustained by further promotion and the pack achieved UK wide recognition by its adoption into the *Open Opportunities* programme of the Open University in 1987.

A major reprint in the same year permitted a measure of updating. While the OU itself does not offer tuition — the course being designed for self-study — several institutions have provided student support and others are being encouraged to do so.

Having launched this modest, low-resource initiative the project development team foresee further improvements in print quality, format and content. They would greatly like to produce the more sophisticated materials and extended treatment which the subject-matter merits and are looking forward to achieving this in the future.

APPENDIX

Scottish History: Themes

(1) Scotland on the eve of the Reformation
(2) The Scottish Reformation
(3) Mary, Queen of Scots
(4) James VI and I
(5) The Crown and the Kirk, 1625–85
(6) Scotland on the eve of the Union
(7) The Union of Parliaments and its aftermath
(8) The Lowlands and the agricultural revolution
(9) The Scottish Enlightenment
(10) The Highlands to 1880
(11) The industrial revolution
(12) Government and politics, 1789–1918
(13) Victorian Scotland: Workshop of the Empire?
(14) People, towns and cities
(15) The inter-war years
(16) Post-war Scotland, 1945–80

Scottish Literature: Themes

(1) Some aspects of early Scottish literature
(2) Robert Henryson (ca. 1420–90)
(3) Scottish Literature in the sixteenth century

(4) Scottish Literature from Reformation to Enlightenment
(5) Robert Burns
(6) Enlightenment and feeling 1746–1832
(7) Scott, Galt and Carlyle
(8) James Hogg
(9) Robert Louis Stevenson
(10) The kailyard and reactions
(11) Hugh MacDiarmid
(12) Lewis Grassic Gibbon
(13) The modern Scottish Novel
(14) Modern Scottish poetry
(15) Gaelic Literature
(16) Scottish Drama

Notes for Tutors

(1) Clearly these *Guides* are primarily designed, like other Open University materials, for self-study using the background reading recommended. In the case of *History* this is pretty self-contained in four texts; while *Literature* (quite understandably) requires wider reading. Students could certainly work through the *Guides* at their own pace, but we estimate that a reasonable appreciation of the ground covered could be obtained in 16–20 weeks. Working at a more leisurely pace, 32 weeks of study (the standard OU period), a fairly deep study could be made in each *Guide*.

(2) Over the 16-week structure these *Guides* would be ideal for a two-term course in adult education, the tutor introducing the topic each week, developing the theme along his or her own lines, raising points for discussion (the self-assessment questions (SAQs) are so designed) and giving guidance on follow-up reading.

(3) The SAQs could be used as potential topics for discussion as essay topics (with appropriate guidance on reading) or as small individual or group projects.

(4) Opportunities exist for documentary source appraisal (on *History*), textual analysis, poetry reading and drama (on *Literature*) and such activities would clearly extend greatly the students' study experience in either *Guide*.

(5) Tutors using the material should be prepared to extend the debates and discussions raised in the *Guides*—both of which cover the "facts"—but are also "problem centred", dealing with debates and controversies in both Scottish history and literature.

(6) Updating of bibliographies is clearly important and this can be done in giving guidance on further reading.

(7) The *Guides* could be used in tandem, providing an excellent introduction to *Scottish Studies*.

(8) Finally we welcome comments on the *Guides* and news of how they have been used (and received) by individuals and study groups. This will help us improve the materials in the future.

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Direct broadcast satellites: New technology for distance education

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INTRODUCTION

There has been rising concern expressed in the United States by both public officials and educators over the ability of public schools to offer today's students the type of education necessary to compete in tomorrow's global marketplace. For many school districts, particularly in rural America, funding for beefed up curricula is scarce and existing resources are stretched to the breaking point. Increasingly, both educators and the U.S. Government are looking at distribution alternatives for distance education as a possible solution to the dilemma.

At last year's National Governors' Association Conference, *Time for Results: The Governors' 1991 Report on Education* made a strong case for use of technology in the schools with particular reference to two-way interaction via telecommunications. The U.S. House of Representatives Committee on Education and Labor has commissioned a study by the Office of Technology Assessment on current issues in educational technology. On April 23, 1987, the U.S. Senate overwhelmingly passed Senator Edward Kennedy's "Star Schools" legislation (S.778), which proposes "a program under which grants are made to educational telecommunications partnerships to develop, construct, and acquire telecommunications facilities and equipment in order to improve the instruction of mathematics, science, and foreign languages..." Support for expanded distance education programs in the U.S. is implicit in each of these initiatives.

In a survey recently conducted by the Public Service Satellite Consortium (PSSC), among 340 rural school districts, 76 percent of those questioned responded that they were interested in receiving satellite-delivered educational programming. The subjects most in demand are math, science, Spanish, French, advanced English, political science, art and music appreciation, and courses for the gifted and talented. In addition, 80 percent of the school districts indicated a need for distance education opportunities for staff development and faculty in-service training. PSSC, a nonprofit public service organization, was created to assist educational and other nonprofit agencies in planning and using advanced telecommunications technology. PSSC member organizations represent a wide range of distance education users in the fields of education, health and medicine, state government, public broadcasting, and civic, trade, and professional associations.

Debate over how best to move from rhetoric to reality in integrating telecommunications technology into the U.S. public education system has heated up and is fueling renewed interest in distance education, using low-cost direct broadcast satellite (DBS) technology. The evidence is clear: satellite technology — existing or soon-to-be — is widely perceived as the solution to deficiencies in today's educational system. The challenge is to come up with a workable implementation plan for distance education that will ultimately enable the 108,000 public schools, colleges, and universities in America to offer a much wider variety of high quality affordable curricula. Although it is generally accepted that distance education can best serve geographically isolated or special populations, PSSC believes its applications and benefits are much broader in scope.

THE YES NETWORK

In response, PSSC is in the process of planning and implementing a dedicated satellite network using DBS technology with distance education as its primary thrust. Tentatively dubbed the YES (Your Educational Service) Network, this distance education system will focus on curricular needs at the primary and secondary levels. Using a satellite dish less than one meter in diameter costing $400 or less, even isolated schools will be able to offer courses in calculus, advanced English, and foreign languages.

The network will also be available for adult continuing education through local hospitals or community colleges, and for professional development by teachers and school administrators.

DBS TECHNOLOGY

DBS technology, using high-powered satellites operating at the upper end of the Ku-band spectrum (12/14 GHz), is taken for granted in many European countries today. In the U.S., however, DBS proponents have fought an uphill battle to develop operational systems. Competition from cable companies and the lack of a defined market for DBS services have stymied the industry and caused numerous setbacks for would-be DBS carriers. Today's DBS companies, after five years of trial and error, are taking a long, hard look at what the technology can do best. Although entertainment is still a major part of the picture, the proliferation of private networks for professional and continuing education has proven the educational field a promising market for new satellite technologies.

Although satellite-delivered instructional television has been used for a number of years, the high cost of conventional satellite dishes and the lack of innovative quality programming have given U.S. schools little incentive to invest in the technology on a broad scale. The advent of DBS technology — high-powered satellites; small, low-cost earth stations; digital transmission; in combination with increasingly sophisticated educational programming — has changed all that. In addition, digital signals producing superior quality video and audio reception, and an addressability feature mean that schools can order programming on an individualized, per school basis. Through a DBS dedicated educational network service, high quality, affordable curricula could be available to every learner in the country.

CONCLUSION

Over the last 10 years there have been repeated calls in the U.S. for some type of dedicated educational programming distribution service. However, technical problems, lack of programming, and management deficiencies have contributed to the premature demise of more than one proposed system. The key to successful implementation of a DBS distance education network is a coordinated planning effort well in advance of the actual satellite launch. This effort will enable network managers to acquire appropriate programming and determine pricing structures and technical considerations in time for schools to use this information in planning their own budgets and curriculum strategies. PSSC, in collaboration with interested educational agencies, has undertaken a study to: 1) determine technical requirements for tying a DBS system to existing systems; 2) compile data on available programs and strategies and guidelines for filling programming voids; 3) develop a business and management plan for a DBS educational network.

The concept of a dedicated satellite educational network has been the subject of much discussion in the U.S. since 1969, when NASA first made available its experimental satellites for distribution of health and educational programs. Other than short-term demonstrations and a handful of ad hoc state networks, a dedicated nationwide satellite educational network for distance education has not evolved, because of the autonomy of local and state educational agencies. This stumbling block is less of a factor in countries with nationalized educational systems. As we approach the 1990's the U.S. has an excellent opportunity to remedy this situation, because of new technology, expanded program resources, and a more enlightened constituency. If such a network is to materialize, now is the time to reflect on the past and, more importantly, plan for the future.

Home study; keeping women in their place?

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INTRODUCTION

Access to education is a key demand of women around the world as they struggle to achieve the equality promised them during the International Decade for Women (United Nations, 1979; 1985). In this context, distance education (i.e. home study) is an attractive option for governments seeking to meet their commitments, and adult women have become an increasingly larger client group for many distance education institutions. Yet despite the important function of home study in expanding women's educational options, only recently have researchers begun to consider the extent to which this mode of education meets women's learning needs or accommodates their learning styles.

In the past decade, feminist learning theory and teaching practice as developed in the contexts of campus-based universities and non-institutional alternative programmes have been reasonably well-examined (see, for example, Bunch and Pollack, 1983; Bowles and Klein, 1983; Culley and Portuges, 1985). In addition, feminist critiques of traditional theories in developmental and learning psychology (Gilligan, 1982; Belenky et al., 1986) emphasize a need to reassess approaches to women's education. The growing body of scholarship on women's education, however, has not generally considered distance education.[1] This fact, coupled with the lack of an empirical knowledge base regarding women's experiences in distance education has facilitated a tendency to ignore women's concerns and to downplay the specificity of women's needs relative to course development and delivery and to academic policy decisions. This situation is no longer acceptable in educational institutions which claim for themselves the goal of enhancing accessibility and success rates for all people.

However, in a changing social context much influenced by the international women's movement, some institutions around the world have established initiatives which do explicitly take women's interests into account. A collection of case studies titled *Toward New Horizons; International Perspectives on Women in Distance Education,*[2] published in 1987 under the auspices of the ICDE Women's International Network (WIN), documents these initiatives and provides the groundwork for defining more clearly the challenges faced by institutions and individuals committed to equity in education. The contributors represent thirteen countries, including many developing nations, and the issues they raise reveal universal patterns in women's experiences as distance educators and students. Clearly distance education is having an impact on many women's lives around the globe and, although there are institutional differences in priorities and methods from one culture to another, there are also remarkable similarities in women's experiences and expectations.

HOME STUDY: BANE OR BOON TO WOMEN'S LIBERATION?

Distance educators commonly observe that their mode of teaching is especially appropriate for women who are homebound with children because it enables these women to further their education without compromising their family responsibilities. It is further apparent that mot mothers who are also employed outside the home would have little or no opportunity to pursue further education were it not for home study. However, these observations often accept uncritically the view that women's place is in the home and that women ought to be the primary or sole caretakers of children. This traditionalist perspective, even when it recognizes that some women may be employed outside the home because of economic necessity, makes education into a luxury for women. Women can indulge themselves in their "free" time as long as this does not interfere with their domestic responsibilities.

From a feminist perspective this raises an interesting problematic: Does distance education, then, reinforce women's confinement to the home and collude with gender role tradition, or does it provide the means for realizing women's aspirations for social and economic equality? The answer is not simple for distance education, like other forms of education and like many social reforms, can be a two-edged sword with both conservative and radical possibilities. Nonetheless, in a world where two-thirds of the population which is illiterate is female (UNESCO, 1984) and significantly greater numbers of males continue to dominate classroom space (Sivard, 1985), distance education directly challenges the traditional exclusion of women from formal schooling while at the same time recognizing the many concrete realities of women's daily lives. Homemakers, whether or not they are working outside the home for income, require time flexibility in their studies and this is a key feature of distance education. Women who are mothers often either lack access to childcare or cannot afford the cost of such services. Also lacking in many instances is the means of transportation required for regular classroom attendance. For these women home study is, in many senses, an ideal solution for obtaining an education, and education, we would argue, provides women with some of the essential tools needed to challenge the traditional assumptions about their role and status and to transform their lives.

OVERCOMING SILENCE AND INVISIBILITY

Angela Mandie-Filer of Papua New Guinea, a contributor to the WIN book, has observed that one of the reasons women in her country might fare better in home study than in the classroom is that women have not been socialized to express themselves aggressively and competitively, so they are unable to hold their own with males in a classroom setting. They learn throughout childhood to remain quiet and submissive. The process of silencing is reinforced in schooling environments and women become afraid to express their opinions because they may be made to feel stupid or even unfeminine if they do speak out. This has the effect of even further diminishing their self-confidence and decreases their ability to speak.

Coulter (1987) makes similar observations in the Canadian context and argues that well-institutionalized patterns of male dominance and authority, both in society as a whole and more specifically in educational institutions, have taken their toll in terms of women's abilities to value their own achievements and derive maximum benefit from formal learning experiences. Home study, however, ameliorates some of the most difficult aspects of classroom education for women by eliminating in large measure elements of the cut-throat competition and hierarchical ordering associated with patriarchal forms of learning which many women find especially difficult (Maher and Dunn, 1984; Klein, 1987; Rich, 1979).

Distance education, however, is not a panacea for women intent on studying but wishing to avoid the sexism of the classroom. The same attitudes that govern male-female relationships on campus are prevalent in distance education course materials, delivery systems, research activities and administrative policies and structures. As observed by the contributors to the WIN book, women are often virtually absent in course content. Female students cannot identify in any personal way with history courses which fail to acknowledge women's past. Literature courses which predominantly or exclusively present male writers likewise deny female significance to the construction of knowledge. The insidious devaluation of women through simple omission has a negative impact on women's self-esteem and on their ability to imagine themselves as able people. Similarly, male-centred research which fails to distinguish between male/female experience, and which presumes the distance learner to be male, reflects attitudes which not only denigrate women but which also decrease the validity and usefulness of that research (Smith, 1978; Rich, 1979; Spender and Sarah, 1980; Spender, 1980, 1981, 1982; Thompson, 1983; Bowles, 1984; Fennema and Ayer, 1984; McIntosh, 1984; Chisholm and Holland, 1986).

Course delivery systems and the administrative structures which govern them also influence women students and can silence them or help them find their voice. Study guides and other instructional tools must be designed so as to welcome all students to the academic enterprise. Tutors also play a crucial role in determining whether or not a woman feels integral to study a programme instead of a marginal outsider. A reiterated theme among the WIN book case studies is the common need for women in distance education courses to receive personal encouragement and a sensitive appreciation of the obstacles they must overcome to achieve educational goals. Indeed, male students would benefit as much as females from a nurturant tutor who is able to demand high scholastic achievement without causing unnecessary stress or destroying student self-confidence.

CONCLUSION

We are only just beginning to understand distinctions between female/male psychology and how gendered experiences of social reality affect learning needs. Nonetheless, research to date surely indicates that a reconsideration of our approaches to, curriculum development, instructional design and evaluation, course delivery and institutional research is in order so that distance education can become gender-inclusive. It is only by applying conscious attention to gender issues that problems can be identified and resolved so that all students, regardless of sex, find their education to be an enobling and empowering experience.

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NOTES

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[1] *The earliest published articles on women in distance education include the works of Peacock et al. (1978 and 1979) and Swarbrick (1978 and 1980). See also Tremaine and Owen (1984) and Thornton (1986).*

[2] *See, Faith (1987). This collection includes contributions from Australia, Canada, England, Fiji, India, Israel, Kenya, the Netherlands, New Zealand, Papua New Guinea, Sweden, Turkey and West Germany.*

Evaluation of distance education programs

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INTRODUCTION

Evaluation has greater significance to distance learning than it has had in traditional education for at least four reasons: (1) innovative proposals require more documentation; (2) distance learning systems involve such fixed costs of production and distribution that they are not easily revised and must be used for a considerable number of years; (3) authors do not come in close contact with students using the materials, making it hard to know when revisions are needed; and (4) visibility to the public reinforces the need for careful planning and analysis (MacKenzie, Postgate and Scupham, 1975:46).

In general, the focus of evaluation in distance learning programs, as in classroom-based instruction, is on either the student or the instructional process itself. Measurements can be taken prior to the process for planning (needs assessment) during the process to identify the need for adjustments in that process (commonly called "formative evaluation") or at the end of the instructional process to gauge the level of accomplishment (commonly called "summative evaluation").

NEEDS ASSESSMENT

A valuable way to put into perspective the reasonableness of proposed course goals and learning objectives is to conduct a needs assessment. Since there are excellent books describing the importance of a needs assessment process for determining what should be taught (Kaufman and English, 1979, Mager, 1972), it should be sufficient here to illustrate the critical role that both faculty and students can play in identifying entry behaviors and needed entry competencies. While content and employer experts from outside a distance education program can provide very useful observations that help determine what completers of the program must be able to do, only faculty and students have direct, recent experience with the instructional program to estimate what minimum entry competencies are needed by students to benefit from that particular instructional program and achieve the specified exit competencies.

DEVELOPMENTAL TESTING AND MONITORING

A concise history of the evolution of program evaluations methods at the British Open University pointed out that in the earlier years students and course tutors were surveyed every week or two on various course components. This standardised information did not always tell why certain programs were successful and others were not. Accordingly, an additional procedure emerged after several years that centred on the developmental testing of instructional materials on a pilot basis. Revisions were then possible prior to full-scale implementation (Gallagher, 1977).

The first article of a five-part series that was intended to describe the most comprehensive individual course evaluation ever undertaken of a British Open University course, was an overview discussion of the Open University's two major models for employing evaluation in course development and revision (Nathenson *et al.*, 1981). The first type of evaluation is critical commenting by content and course design experts, which occurs prior to student use. Rowntree (1986) lists specific questions that have been raised about content matter or instructional effectiveness during such critical commenting. Student tryout represents the other type of evaluation data. The student trial can be developmental testing prior to full scale implementation or careful monitoring of all students for one or two years, with needed revisions leading to a total shelf-life of eight years (the 1–7 and 2–6 models). The feedback methods need include computer surveys of student opinion, item analyses of students' assessment scores and in-depth interviews with students and course faculty.

Some sound principles that will be of considerable value to individuals who are beginning instructional program evaluation efforts have been offered: start out simply, use a variety of existing instruments when appropriate, employ informal indicators of program success widely, begin activities on a trial basis on the edge of the institution, separate program evaluation from personnel evaluation and en-

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courage widespread involvement by program staff and participants in the evaluation (Lehmann, 1981).

In a recent survey of 42 American and 15 Canadian distance learning programs, it was found that course valuations by students were requested by 61 per cent of the institutions. In addition, evaluation of instructors was done in 53 per cent of the programs. Of those instructor evaluations, 47 per cent were by students alone, 43 per cent by staff alone and 10 per cent by other groups (Hegel, 1981). These data demonstrate the usual importance placed on student participation in the evaluation process.

EVALUATION BY STUDENTS

Published evaluation reports are available that detail the many ways in which independent/correspondence study course completers are very satisfied with their experiences. As an illustration, 76 per cent of the 316 respondents at nine midwestern and southeastern universities answered a common 15 - question survey and reported that they would take another course by correspondence study (Leverenze, 1979:9). Furthermore, only 11 per cent of the completers in the survey indicated that the overall quality of their correspondence courses was fair or poor. More current evaluation studies are available from single institutions that include comments from both course completers and course drop-outs (terminators).

Copas and Ross (1986) recently provided one of the more complete published reports describing the development and analysis of a set of evaluation instruments by which course completers and course terminators could systematically comment on their independent/correspondence study course experiences. After completing their final examinations, 665 students answered 61 statements about the course instructor, instructional materials, assignments and examinations and the self-assessment level of learning. Of students who terminated the course prior to completion (885), 19 per cent answered an instrument of 29 items which reported reasons for enrolling, reasons for not completing the course and support needed to complete the course. Those students who viewed feedback from the faculty member as untimely or inadequate (usually noncompleters) reported not knowing how to proceed in the course. The most frequent complaint about examinations was not having a detailed preview of what each exam would cover. No surprisingly, those students who terminated the course had far more trouble in obtaining materials, comprehending the textbook and securing adequate direction from the study guide. The use of scheduled due dates was viewed as a promising method of increasing course completions.

The evolvement of course evaluation from a system wherein all students were asked to comment on every instructional unit in every course (but a minority of students responded) to the use of 5–8 paid student evaluators per course was described by Von Prummer (1983). While the student evaluators were initially all given a second set of course materials in which to write comments, more recently some students have been allowed the option of sending in comments on audio-cassettes. In addition to individual evaluations, unanticipated information is also collected from group interviews with students who had completed those unit evaluations.

EVALUATION CRITERIA

A number of criteria for determining the success of an open learning program have been recommended. An access criterion can indicate how many and what kinds of people are served. A second criterion is the relevance of the distance education services to the needs and expectations of the community. Additional criteria are the calibre of learner outcomes and program offerings; their cost-effectiveness; and institutional impact, which consists of influences upon the goals, policies and practices of other institutions and society in general (Gooler, 1979). One instance of this latter criterion would be the generation of new knowledge.

The economic performance of institutions has been receiving increasing attention. An article that appears in the Australian journal, *Distance Education,* aims to help distance education program administrators determine break-even points for specific activities (Markowitz, 1987). Such calculations represent an important component of the concern about cost-effectiveness and efficiency. Two additional criteria are the time it takes to produce a graduate and the number of graduates as a proportion of the number of students admitted (Keegan and Rumble, 1982).

USE WITHIN ACCREDITATION

Special efforts have been made to have distance learning programs evaluated in a comprehensive and accurate manner for regional and state accreditation. For example, important focus areas in the self-study efforts by institutions that are members of the National University Continuing Education Association (NUCEA) and have independent/correspondence study programs include philosophy, mission, administration, staff, faculty, instruction, services, research and evaluation (Burcaw, 1982:293). An excellent example of a successful, comprehensive self study using these standards is the report for the 1979 accreditation of the University of Minnesota by the North by the North Central Regional Association (Horgan, Nelson and Young, 1979). In addition, program evaluations at many different organizational levels have been described by Feasley (1980).

COMPARISONS WITH CAMPUS INSTITUTIONS

Comparisons between traditional and nontraditional institutions have proven invaluable in demonstrating their strengths and weaknesses. For example, a comparison of the effectiveness and costs between a noncampus institution (Whatcome Community College in Washington state) and three similarly sized, campus-based colleges found that the noncampus institution: (1) seemed to perform as effectively in most operational areas; (2) performed no better in determining and satisfying the needs of target groups; and (3) spent 10 per cent less per student and 6 per cent less per course than the campus-based institutions (McIntyre and Wales, 1976).

In another study, an estimation of costs of the University of Mid-America (UMA) was contrasted to those of a sample of 37 traditional colleges and universities in Indiana, projecting that UMA would be cost competitive if it had more enrollments (Kiesling, 1979). Unfortunately, many published cost comparisons are based on estimated costs. The fact that the UMA never did obtain those greater enrollments is a significant limitation on the use of estimated costs.

As an example of the more reliable use of measurable data, a comparison of the post-course achievement of distance learners and those in classroom universitites demonstrated their equivalence in multiple-choice and essay examinations in economics (Lumsden and Scott, 1982). Even more recently, some careful work has been done on the concept of exchangeability as an approach to establishing realistic control groups for distance learning (Shavelson, Webb and Hotta, 1987).

SUMMARY

This paper has described how distance education programs utilise evaluation processes for planning (needs assessment) for making operational adjustments (developmental testing) and for determining value (summative evaluation). It has also described the differing evaluation roles that are played by students, faculty members, and outside experts.

To meet the needs of internal and external audiences, various evaluative criteria were identified in this paper: accessibility, relevance, quality, cost-effectiveness, completion rates, efficiency, impact on other educational institutions and impact on society in general. Such comparisons may be made with other similar institutions or with regard to the same institutions at an earlier point in time.

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Distance education primary level: a possible alternative

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PRIMARY EDUCATION FOR ALL

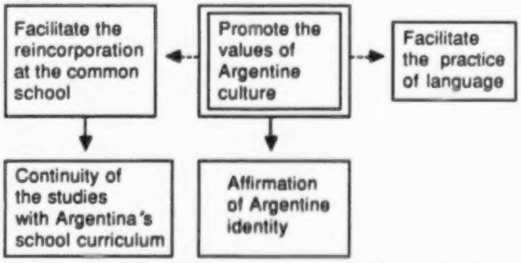
The transformation of education, to offer equality of opportunity for all, must be a priority not only in methodology and curriculum, but also in the function and structure of schools and colleges so that they can meet the needs of various sections of the population.

In the Argentine political system, which stands for justice, freedom and involvement, education must work for cultural values, the sense of patriotism, natural interest, mutual understanding, peace and solidarity. With these principles in mind, the Direction Nacional de Educacion Pre-Primaria y Primaria,* formed its service for Distance Education (SEAD) from 1st to 7th grade, aimed at the children of Argentine citizens residing abroad.

Besides promoting Argentine cultural values SEAD encourages the children to practise their mother tongue and favours the possibility of their joining the Argentine educational system. It allows children to follow their studies at home, without wasting time or the taking of exams which generally turn out to be difficult for them. (See figure 1)

Although SEAD started as far back as 1981, through an agreement with the Foreign Office, it was aimed at the children of diplomats and for those who were living abroad due to legally justifiable reasons (work, for instance). In 1984, the service was rearranged, in respect to organization, methodology and intended beneficiaries: children of all Argentines living abroad, no matter why they had decided to leave Argentina.

Figure 1

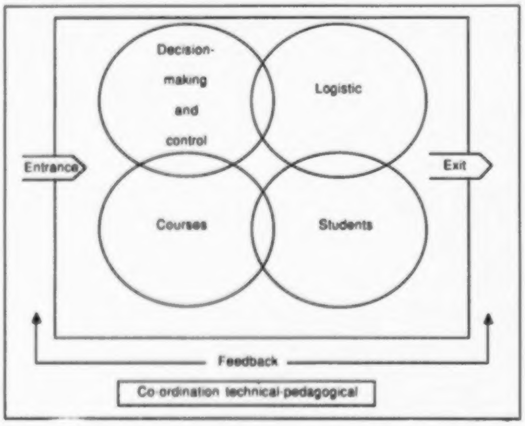

Facilitate the reincorporation at the common school
Promote the values of Argentine culture
Facilitate the practice of language
Continuity of the studies with Argentina's school curriculum
Affirmation of Argentine identity

HOW DOES SEAD WORK?

A systemic approach was selected, because it simplifies the development of a system based on this type of education.

The system is described in Figures 2 and 3.

Figure 2.


Decision-making and control
Logistic
Entrance
Exit
Courses
Students
Feedback
Co-ordination technical-pedagogical

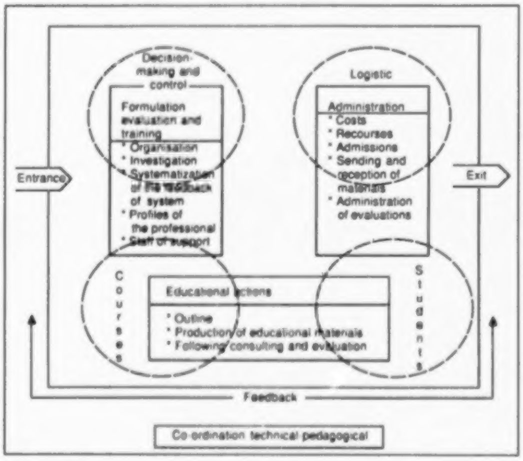

Decision-making and control
Formulation evaluation and training
* Organisation
* Investigation
* Systematization of the feedback of system
* Profiles of the professional
* Staff of support
Logistic
Administration
* Costs
* Recourses
* Admissions
* Sending and reception of materials
* Administration of evaluations
Entrance
Exit
Courses
Students
Educational actions
* Outline
* Production of educational materials
* Following consulting and evaluation
Feedback
Co-ordination technical pedagogical

Figure 3.

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* National Direction of Pre-Primary and Primary Education.

In the chosen system, four subsystems can be identified:

(1) *Decision-making and control:* corresponds to top level decision making
(2) *Logistic:* deals with the assignment of resources — human, financial, material
(3) *Students:* manages and checks students' progress. Also, admission, enrolment and follow-up, the sending and reception of material, the administration of tests
(4) *Courses:* responsible for the design and production of educational material, correction and follow-up of students' work.

Subsystems (3) and (4) are dealt with particularly by the SEAD team. The other two, though related, are not under the control of the team.

We shall start with a description of planning and research.

After research and using the results obtained, SEAD was restructured and the technical staff attended training courses.

FEEDBACK. ITS SYSTEMATIZATION

As is the case in all systems, SEAD requires constant assessment of its service. One of the precise indicators of the quality of the service is the performance of students who, having used it for a certain period of time, must rejoin the ordinary primary school or secondary courses.

The students' performance in either of the two levels will show how well their basic education at a distance has worked. In order to assess this performance, research instruments have been made up for parents, teachers and students to fill in, a few months after the children have rejoined the school system.

At present 1st grade, which was included in the service last August with a new methodology, is being assessed. The difference in methodology is due to the fact that the children must start reading and writing; as the service uses printed matter only, this is addressed to parents, guiding them in their role and tutors.

THE DESIGN AND PRODUCTION OF MATERIAL AND ITS SELECTION

Although functions of distance education have points and characteristics in common with the usual school system they have their own peculiarities that force a very careful selection of contents, a qualified proposal of activities and the use of strategies and instruments that will show very clearly what our aims are and what we intend the students to attain. It is also important that students can re-enter the educational system, so the course should reflect existing curricula.

With these ideas in mind, a curriculum was worked out in which all areas are integrated in theoretic-practical learning activities, in a milieu of guided research. Thus, the student will discover the validity of learning and its applicability to real life.

When selecting the contents, we took into account their relevance to realistic, scientific and social needs and practical methods of learning.

The proposals were:

- to stimulate the cognitive processes of all children
- to use contents which have a connection with the environment (whenever possible, bearing in mind the characteristics of the service)
- to use contents that might help to solve problems arising in their daily lives, as a way to connect school, family, community.

PRESENTATION OF PRINTED MATTER

Contents are organized in the form of problematic situations, with the purpose of stimulating the child in the search for meaningful answers.

Modules are not self-sufficient. Different areas are integrated in them to obtain a chain of objectives.

The service has a follow-up system that also assesses the students. This consists of evaluation tests that are returned to the students, as well as a permanent consultant service, carried out through correspondence, telephone or personal interviews, whenever the situation allows.

The results of the tests are used:

- to establish suggestions for revision for students,
- as a cause for promotion,
- to credit students rejoining the school system,
- to assess the system. By this, we mean it serves to validate the material and to show the possibility of integration in the formal education system on students' return to Argentina.

Tutors correct tests and keep in touch with pupils and parents. Parents, who act like the teacher in regular education, receive guides to help their work, in an effort to attain better results.

Although the purpose of the service is to offer primary education to Argentine children who cannot attend the regular system, an idea arose regarding another population: children who live in our country but who do not have easy access to traditional education.

DISTANCE EDUCATION AT PRIMARY LEVEL WITHIN ARGENTINA

Factors, other than those related to the school system, such as low socio-economical level, "golondrina" population,[*] or regions where it is difficult to reach the populated zones, prevent education for all.

How is it possible to give education to everybody in a country which has large regions with adverse living conditions, and children who have to work and are forced to leave school at an early age?

Answers can be found in distance education methods. This type of education permits the democratization of teaching, because it helps produce equal opportunities, as it enables a greater number of people to make use of educational facilities. It also removes restrictions, exclusions and privileges, which are frequent in conventional forms of education, where student and teacher must attend at a pre-set place and time.

We propose to offer the material produced by SEAD to all regions that might require it, whatever circumstances they are in:

- pluri-grade schools (one teacher-schools),
- schools in zones of difficult access,
- "Golondrina" population and others.

In these cases, the SEAD would offer "self education" material to help the teacher in one-teacher schools, or to serve as an alternative to school-families, when the physical conditions of the region make it very difficult for the children to attend school regularly.

We believe it is important to note that although our service provides an educational strategy that permits a flexible approach to the time of learning, duration, intensity, etc and that also overcomes barriers such as distance or unfavorable zones, we consider that *school as an institution is of fundamental value* for those children, and we do not want them to leave it.

It can be seen that SEAD could meet the needs of the children in the country, who cannot attend school regularly, offering them the same quality of education and promoting the democratic characteristics of education in Argentina.

TUTORIAL ORGANIZATION

Distance education methods imply new roles, both for students and for teachers, new attitudes and new approaches.

From this point of view, the tutorial organization has a fundamental part in SEAD, because most of the feedback process is done through it. Also, the organization helps the motivation or users and their learning processes.

Based on the characteristics of education at a distance, the tutorial service is offered in several different fields and is of varied nature.

In general, the role of a tutor is to:

- create an atmosphere of confidence and friendship that will foster processes and situations of interpersonal communication, according to the conditions and circumstances the students are in, with the aim of helping to remove the different obstacles that interfere with learning,
- intensify the basic motivations of students, in the search for answers adequate to their natural expectations,
- induce processes of reflection and organised action so that the student will work on his or her own, will try, experiment, rehearse, identify facts and situations in the learning activities, and also discover new knowledges, using experience and previous knowledge,
- guide and support autonomous development, critical and creative, related to the understanding of reality.
- guide and advise the learning process in relation to the methodology, providing the student with techniques of study, help with using basic material (printed) and/or complementary material (radio),
- assess objectively, systematically and permanently the learning process,
- promote and stimulate processes of interaction and participation, through the work of dynamic groups starting from the identification of common needs and objectives,
- define and apply processes and procedures, useful for the follow-up of the students.

KINDS OF TUTORIAL SERVICE

The tutorial service varies according to the targetted population and the characteristics of the region.

In some cases, the tutor may be the teacher of the school the students attend. This may lead to difficulties where road conditions, climate etc., are poor. Where this will happen the tutor will personally supervise the use of materials with which the student will work at home, thus making it possible for them to attend school less.

In other cases, in regions far away from urban centres, the teacher will go round different communities, helping a certain number of students. This help refers to the identification of possible problems, learning of habits of study, research methods. He or she will have to answer the students' anxieties or worries, and will give them work and material to work together with their family or their community during a certain period of time, thus organising a system of alternatives: family-school.

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[*] "golondrina" (lit: swallow) population: refers to families that are forced to migrate to find work: cotton, tea, tobacco, harvest collection.

A different group, already mentioned, is that of children who, due to work, are forced to stop going to school temporarily. They find themselves in a very difficult situation, because when they return, a few months later, they are so far behind that they either have to do the course again or they simply drop out.

In these cases, two kinds of tutors would be necessary: one, the teacher of the school they usually attend. His or her task, besides the one he or she usually does, will be to teach the children to use the material they will need while they are away from school. The other tutor will be a member of the working community or a senior student where the parents cannot perform the role. This tutor must be willing to help, and be able to read and write comprehensively. This implies the organization of regional centres or school centres, whose structure and functioning will be important if they are to be useful.

It is our proposal that SEAD offers primary education to all Argentine children who are unable to attend school regularly (and in this way, favour education for all), a strategy in which the family might participate actively, with the subsequent benefit for everybody.

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Assignment construction and evaluation in distance education

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THE ROLE OF HOME ASSIGNMENTS IN DISTANCE EDUCATION

Everyman's University of Israel (E.U.) has established an academic distance teaching system which aims to enable students to study on their own, anywhere. The system consists of a set of study components such as: written material, audio visual aids, home assignments and final exams. Most of the material is especially designed for distance study.

Assignments play an important role in such a distance teaching system. Being based on a question-answer strategy, they constitute a dynamic tool for a didactic dialogue with the student. They initiate active and meaningful participation of the student and provide a tool for monitoring progress and assessing achievement.

The paper presents some of the features of assignment construction and evaluation (ACE) in E.U., and discusses theoretical and practical problems involved in turning them into an assessment system which could be harnessed to the process of teaching-learning at a distance.

CHARACTERISTICS OF ASSIGNMENT CONSTRUCTION AND EVALUATION AT E.U.

There are about 160 courses at E.U., taught during a four-months semester. For these courses about 13,000 questions are constructed each semester. These constitute about 600 tutor marked assignments (T.M.A.s), 200 computer marked assignments (C.M.A.s) and about 350 final exams.

Each course is a basic unit of study with a separate set of assignments and tests which are re-designed each time the course is given. In order to get credit for a given course, students have to submit a certain number of home assignments which count for up to 40% of their final grade, and pass the final exam which counts up to 60% of the grade.

Two main issues have to be considered with regard to ACE at E.U.

- The structure of the instructional system. Instructional functions within a course are distributed among several teachers: The course coordinator constructs assignments and exams and the tutor to whom each student is assigned marks the assignments and supplies feedback to student and to the system. Furthermore, these teachers start to function after the course has been produced. They were not necessarily part of the original production team and have no tenure, particularly the tutors who are hired on a semester basis.
  This structure might lead to gaps in the didactic and contextual perception of the course, as well as to lack of continuity and integration in ACE.
- The nature of distance education — One of the main characteristics of distance learning is the lack of immediate interaction among teachers and students. This necessitates construction of a multi-feedback system which could function at a distance and would be an integral part of assessment. The student who is supposed to study alone needs detailed feedback on performance in assignments diagnosing mistakes and instructing how to continue. Coordinators and tutors need additional feedback which refers to the quality of their instruction and gives indications for future ACE.

AN INFRASTRUCTURE FOR ACE AT E.U.

The department of evaluation and didactic training at E.U. dealt intensively in the last few years with the issues mentioned above, offering counseling to course coordinators and tutors.

Three major issues are outlined and discussed:

1. PREPARING A THEORETICAL FRAMEWORK

In order to establish more systematic ACE within each course it became imperative to define a theoretical framework for assessment. Initially, the content of a given course was analyzed along with the scientific skills required for its study. Such an analysis was based on L. Guttman's Facet Theory[1], implemented by mapping sentence technique[2] and presented in the form of a "course map". The faceted definition presents simultaneously various TYPES of items for assessment together with the criteria for evaluation of the answers.

The following is an example of a "course map" in History. In it there are twelve facets, each of which presents a possible classification of the material:

Margalit Ganor
1987

A MAPPING SENTENCE FOR THE ASSESSMENT OF STUDENTS ACHIEVEMENT IN A HISTORY COURSES

	A		B		C
student (x) is required to	a_1 *describe*	historian's	b_1 *description*	of	c_1 *itself*
	a_2 *define*		b_2 *interpretation*		c_2 *research*
	a_3 *give example*				
	a_4 *give reasons*				
	a_5 *sum up*				
	a_6 *classify*				
	a_7 *compare*				
	a_8 *conclude*				
	a_9 *evaluate*				

	D		E		F
of historical phenomena based on	d_1 *primary source*	of	e_1 *philosophical*	nature with regard to phenomena	f_1 *themselves*
	d_2 *secondary source*		e_2 *historical*		f_2 *occurrances*
	d_3 *research*		e_3 *biographic*		f_3 *processes*
	d_4 *study material*		e_4 *artistic*		f_4 *attitudes*
			e_5 *instructional*		f_5 *opinions*
			e_6 *official*		f_6 *unspecified*
			e_7 *personal*		
			e_8 *essay*		
			e_9 *epigraphic*		

	G		H		I
with reference to	g_1 *persons*	in	h_1 *ancient period*	in	i_1 *Europe*
	g_2 *groups*		h_2 *transition period*		i_2 *Islamic countries*
	g_3 *institutes*		h_3 *modern period*		i_3 *both*

	J		K	
in	j_1 *personal*	life area of	k_1 *intra community*	frameworks
	j_2 *cultural*		k_2 *inter communities*	
	j_3 *religious*		k_3 *all*	
	j_4 *social*			
	j_5 *economic*			
	j_6 *fiscal*			
	j_7 *political*			
	j_8 *all*			

	L	
→	*very high* *to* *very low*	performance according to scientific criteria

As can be seen in the map, the following classifications were reached: A — classifies types of cognitive tasks; B and C — classify specific tasks in History studies; D and E — classify types of source material; I to K — classify the contents of course material; 1 — gives the range of evaluation.

Each type of item is called a construct and it includes one element of each, or of some of the facets.

The outcome is a cartesian product:

A B C D E F G H I J K
9 x2 x2 x4 x9 x6 x6 x3 x3 x8 x3
= 5,037748 types of items

The mapping sentence reads as follows:

student (x) is required to fulfill a cognitive task (A) referring to Historian's task (B) dealing with historical phenomena (C) based on source material (D) of nature (E) with regard to historical subject (F) to group of reference (G) in time (H) in place (I) in life area (J) in framework (K). The students performance is evaluated from high to low, according to scientific criteria.

Three TYPES of facets were mostly sought for:

- Facets classifying the tasks required of the student; i.e., to describe, to analyze, to define, etc. These facets are supposed to be hierarchically ordered and could be based on known theories such as Bloom's Taxonomy[3], or Guttman's theory of intelligence[4].
- Facets defining specific scientific skills, such as the analysis of historical documents or drawing economical charts. Here again existing models of classification could be used.
- Facets defining the content of the course such as time and place in history or range of theories in psychology.

Several course teams in various study areas such as history, art, statistics and social sciences have already analyzed their material and prepared "course maps".

The prepared maps constituted a conceptual framework for a more systematic preparation of assignments while at the same time setting the criteria for evaluation by the tutors; i.e., linking the definition of course aims with assessment of their achievement.

2. FEEDBACK

Feedback systems were planned to be on two levels: that of the individual student and the group level.

- feedback to the student — Supplying such feedback is usually within the jurisdiction of the course teachers: the coordinator who could add computerized remarks to the C.M.A.s, an option which is not used enough, or the tutor who is supposed to refer to subjects such as the answer being correct, complete and in accordance with the given task, while correcting T.M.A.s.
- Feedback on group results — This kind of information is particularly important to the various teachers of a course. The guiding principle was to supply rapid feedback of diagnostic nature with regard to the quality of the questions as well as the level of achievement. Since all assessment results are fed into a central computer, it was possible to design computerized reports that would be based on that data and could be regularly produced and distributed to the relevant parties.

The following reports have so far been developed at E.U.:

- analysis of C.M.A. results — the report presents the achievement of students in a course and supplies data on the quality of the questions. It has two parts:

  The first refers to the level of difficulty of the questions, the quality of the distractors and the index of discernment between weak and good students. The second part includes a histogram showing the distribution of the questions according to their level of difficulty, i.e., the percent of those who answered correctly.
- analysis of T.M.A. or final exam results — the report presents details about the grades of the various study groups (by tutors) on each question and on the test as a whole. The second part of the report gives a histogram which portrays the distribution of grades of all the students in that course.
- particular reports dealing with open-ended questions have been designed on an experimental basis. In some of the courses there is a report on the means of each study group and a report presenting profiles of students on each question.
- a summary report comparing achievement of study groups and all course students, in C.M.A.s, T.M.A.s and final exams — This report presents the number and percent of those who took the final exam. For them the following data is calculated: means and standard deviations in C.M.A.s, in T.M.A.s and in finals; gaps among grades in the various assessment tools; correlation between achievement in assignments and finals and data about the number and percent of credits achieved in the course.

  Computerized feedback required a large investment in programming. Nevertheless all regular reports are now being produced and distributed each semester. Both teachers and system heads use them for purposes of reevaluation of teaching, decision making, and didactic training of staff.

3. A BANK OF QUESTIONS

The quantity of questions produced each semesterand the frequent change of "teachers" and sometimes their lack of didactic training brought about the necessity for establishing a computerized bank of questions. The bank would make use of all the information which is being stored in the computer. The bank would contain a collection of questions for each course, classified according to various characteristics, together with accumulated information on the quality of the questions and the level of achievement on each of them.

One of the main classification systems in the bank is based on the "Course Map", which has so far served as a basis for the preparation of the questions, and could now be utilized for the purpose of storage, evaluation and retrieval of questions.

The bank raised many questions at first, most of them concerned the role of the teacher in the construction of tests. It was made clear that the bank would not make question production automatic but is meant to assist course coordinators in preparing systematic and varied ACE.

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The perspective of distance education in China

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Today all the countries in the world are faced with the challenge of the technological revolution and have all considered the development of education as an important measure to meet that challenge. In the light of its national condition, China must set great store by distance education and fully develop it so as to enhance the scientific and technical quality of the whole nation and to improve the present situation where the standards of education lag behind economic and social development. Practice shows the development of distance education in China with its 10 billion people not only has an important immediate significance but a long-term perspective.

THE CURRENT SITUATION OF DISTANCE EDUCATION IN CHINA

China started correspondence education in the middle of 1950s and some provinces and municipalities established radio and TV universities in the early 1960s. In the last ten years there has been great progress of distance education in China.

TV secondary specialised schools started in 1979. By 1985, there were 95 of these kinds of schools with 230,000 students enrolled and many subjects offered, including mechanical engineering, electrical engineering, architectural engineering, finance and economy, secretary, science, law, teacher training and so on.

The central broadcast School of Agriculture was set up in 1981, and was followed by the establishment of branch schools in more than 2,300 counties (and state farms) in 28 provinces, autonomous regions and municipalities and more than 24,000 villages and rural towns have organised classes. Four academic majors of agronomy, agricultural economy, livestock husbandry and freshwater fish-farming have been developed for 830,000 participants. By the end of 1985, 75,000 students had graduated from the school.

Higher education by broadcasting has occupied a dominant position in distance education in China. In addition to the central Radio and TV University and Central Radio and TV Normal College, there have been 38 provincial and municipal TV universities (among them ten are to be independent, municipal TV universities). Six courses of science and engineering, teacher training, Chinese language and literature, finance and economy, management, politics and law have been provided with 19 academic majors and nearly 1,000 specialties offered. Thus a network of broadcast and TV education has taken shape based on urban districts and rural areas throughout the nation. Statistics in 1986 show that 303,400 students graduated from higher distance education institutions (among them 54,700 students were from correspondence higher education institutions), equal to 77.2 per cent of the total number of the regular university and college graduates in the same period; and the higher distance education institutions had an enrolment of 1,051,100 students which made up 55.9 per cent of the total number of enrolled students in regular higher education institutions. It shows that distance education has been an important component of the whole educational system in China.

THE NEED TO DEVELOP DISTANCE EDUCATION

In China distance education is in the ascendant and will surely have a growing importance on account of the Chinese national situation.

Table 1: The number of university students per ten thousand people

Country	USA	Japan	France	USSR	W.Ger	Mex.	India	Pak.	China
Number	524	210	197	193	138	87	58	17	11
Year	1977	1976	1976	1976	1976	1975	1976	1974	1982

Table 2: The number of illiteracy per ten thousand people

Country	The number of illiteraty	Proportion of illiteraty	The Lowest Age	The year of investigation
China	23,583	23.5 %	12	1982
India	21,164	66.6 %	15	1971
USSR		0.2 %	15	1979
USA	143.5	1.0 %	15	1969
Indonesia	2,880	43.4 %	15	1971
Brazil	1,564	24.3 %	15	1976
Japan	142.5	2.2 %	15	1960
Pakestan	2,898	79.3 %	15	1976

Firstly, China is devoting itself to realising the four modernisations, so it is in urgent need of a large number of specialised personnel. But compared with some other countries, the number of university students per ten thousand people shows the scarcity of high-level specialised personnel. See Table 1.

Secondly, China has the largest population in the world: it makes up 22 per cent of the population of the world. Though a large population brings advantages in the form of labour resources, the quality of the labour force will be poor if the level of education is not very high. There is still a lot of illiteracy in China, in comparison with some other countries, see Table 2.

In order to complete the task of eliminating illiteracy in a short time, it is not enough merely to rely on conventional education but it is necessary to place hope on distance education.

Thirdly, China is still very poor at the present stage. In 1980 the World Bank published a list of poor countries, China being one of them. Our per capita national income is only $200–$300 (US) and even by the end of the century, our per capita educational investment will only have reached 70 (Ren Ming Bi) (equal to $19 (US)) every year; while in America and Japan it was $1,000 (US) in 1984. One of the advantages of distance education is to be able to train more personnel with less money. Therefore, it is all the more necessary for China to develop distance education.

Fourthly, without continuing education, even a developed country would have difficulty in maintaining its economic position in the light of the technological revolution. Being a country short of trained personnel, China will undoubtedly set great store by continuing education for all kinds of specialised personnel and consider it as an effective measure to keep them abreast of new developments. China now transmits teaching programmes of continuing education in engineering by communications satellite, which are generally welcomed by engineers and technicians. The radio and TV universities in provinces, autonomous regions and municipalities, according to their local situation, offer courses of continuing education in all specific fields to satisfy those who hope to update and supplement their knowledge.

FAVOURABLE CONDITIONS OF THE DEVELOPMENT OF DISTANCE EDUCATION IN CHINA

Distance education in China has spread all over the country in a very short time. This is because of the obvious educational need, and the socialised cooperative school operation, both of which can be described as the Chinese characteristics of the development of distance education.

China has the material conditions for the expansion of distance education. We have launched an educational satellite and set up broadcast stations and TV stations in provinces, autonomous regions and municipalities which have installed the special educational channel. Statistics in 1984 show that in China over 200 million families have radios and 30 per cent of families have TV sets. The institutions and organisations with distance education departments generally have circuit TV or TV receivers and transmitters. All these have provided us with the material foundation for the development of distance education on a large scale.

What's more important is the great attention to distance education paid by the Chinese government. Its leaders have for a long time stressed the necessity of the development of distance education. Premier Zhao Zi Yang once pointed out: "It is suitable for China to set up TV universities, which is a greater, faster, better and more economical way to train talented people."

In recent years, millions of people have actively participated in study via distance education schools of various kinds and various levels, showing their great enthusiasm in the improvement of their scientific and cultural accomplishment and demonstrating that distance education is unprecedentedly well received and valued in China.

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Electronic tutorial system for distance education

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INTRODUCTION

The academic tutorial is central to the traditional process of higher education (Papert, 1980). During tutorials, students meet with an academic teacher and, in a comparatively unstructured session, ask questions, make comments and explore the domain of knowledge within the discipline. Students also learn from each other, under guidance of the teacher. These tutorials not only impart information but also form attitudes to scholarship and learning which provide a further dimension to academic development which cannot be learnt readily from printed material alone.

Distance education students may not have these same privileges of access to a tutor. At best, distance education students meet for intensive tutorial sessions two or three times per semester at study centres or on campus. At worst, the only academic feedback they receive results from the return of marked assignments submitted as part of their assessment process.

This paper reports the development of an electronic tutorial system which provides students with access to their tutor, and other students, at any time during semester. The tutor initiates the matters to be discussed in the tutorial and guides its evolution. The students have no constraints on access or comment. The system is designed for students and staff with no previous experience of this type of technology.

METHODS

General description: The students and tutors gained access to the electronic tutorial system from computer terminals which connected to a central computer through the switched telephone network (fig. 1). A computer program helped the participants to ask questions, make comments, or send messages to each other. It provided a file storage system to allow for the retention and retrieval of tutorial material. A simple word processing package enabled the students to enter and edit their material for communication.

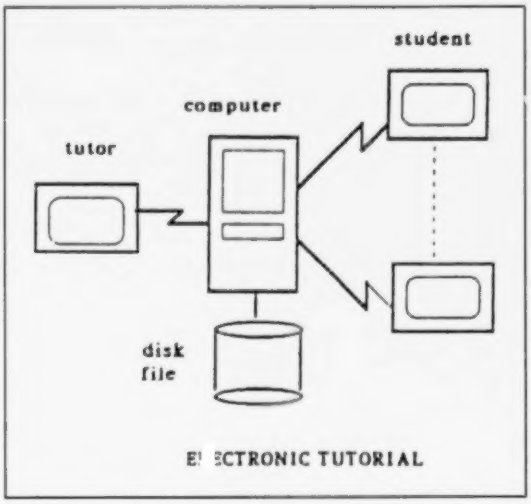
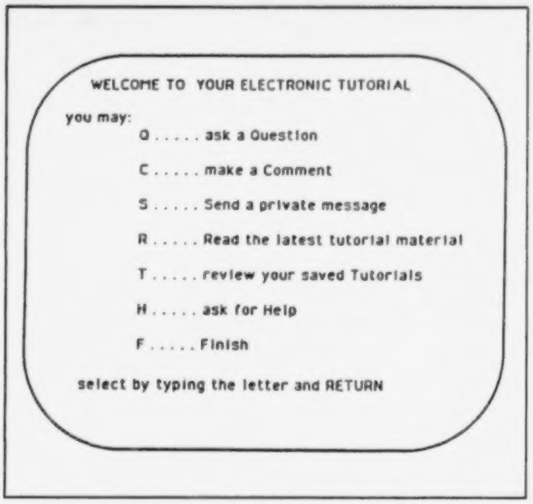


Figure 1.

Student access. The students and tutors were provided with a Microbee Teleterm and a printer. This device was an intelligent computer terminal which stored the complete protocol to allow connection of the terminal to the computer through the switched telephone circuit network. The Teleterm also sent automatically the logon procedure to provide connection to the system.

In order to start the electronic tutorial system, the participants switched on the terminal and pressed appropriate function keys. The terminal dialled a toll-free number which provided connection to the computer. The stored commands initiated the electronic tutorial program which displayed an initial selection menu (fig. 2) on their terminal screen.



```
   WELCOME TO  YOUR ELECTRONIC TUTORIAL

you may:
          Q . . . . . ask a Question

          C . . . . . make a Comment

          S . . . . . Send a private message

          R . . . . . Read the latest tutorial material

          T . . . . . review your saved Tutorials

          H . . . . . ask for Help

          F . . . . . Finish

 select by typing the letter and RETURN
```

Figure 2.

The Tutorial. The design of the electronic tutorial was intended to reflect the processes of a normal tutorial. If a student or tutor used the system to ask a question or make a comment through their terminal, that question would be received (heard) by all other participants when they connected to the tutorial. When a student or tutor answered a question from their own computer terminal, the answer was sent automatically to all participants in the tutorial. There was also facility for sending private messages from one participant to another. Any of the material could be stored for later reference.

The actions resulting from the initial selections were as follows:

> *Q. Question.* Either the students or the tutor could ask a question by selecting this option from the list. The computer responded with a request for a heading which was used to identify the question in later displays. The computer then requested the text of the question, which should have been prepared previously with the word-processing program. The question was terminated by .END on a new line.
>
> The question was "heard" by all members of the tutorial — that is, it was automatically broadcast to the tutor and every other student participating in the electronic tutorial.
>
> *C. Comment.* A comment was treated in the same way as a question — that is, when the tutor or a student entered a comment it was received by every member of the tutorial group. Students were encouraged to comment on questions asked by the tutor and on the answers provided by other students.
>
> *S. Send.* This allowed a participant to send a personal message to any other member of the tutorial.
>
> When S was selected a second numbered list was displayed with the names of all the participants in the tutorial. The person to whom the message was to be sent was chosen by number and the computer system requested details of the message to be entered. The system responded when it received the .END terminator by confirming that the message had been sent to the selected person.
>
> *R. Read.* This option allowed the participants to read all of the questions and comments that had been made as part of the tutorial system and any personal mail that may have been sent.
>
> The system listed the headings of all the questions, comments and mail that had been sent to the participant since the previous connection. The detail was then displayed one message at a time for review. Pressing a particular function key on the terminal allowed the information to be printed out as well as being displayed. As each item was displayed, the participant had the option of saving it for later review.
>
> *T. Tutorial Review.* The material that had been saved while reading could be reviewed at any time by selecting the T option. A summary list of saved messages was displayed. Selected items could be printed out or shown on the terminal screen. Any item may could be retained or deleted from the saved material.
>
> *H. Help.* A comprehensive HELP function allowed the user of the electronic tutorial to obtain on-line assistance regarding the operation of the system.
>
> *F. Finish.* The selection of this item concluded the electronic tutorial and released the telephone circuit for another student who may wish to connect.

The Participants. Students were selected from a non-technical course in order to test the principle of ease of use. Students from a senior law course were selected to provide a mix of age, location and academic ability as measured by their grade point average. These students were matched with a control group in order that any quantitative change in academic performance which might be attributed to the electronic tutorial system could be measured. A training session of 3 hours duration was held for all participating students.

An initial questionnaire was answered by all students in the study and in the control group. This requested details of their past experience with computers and keyboards, and sought to determine their attitude towards the use of an electronic tutorial system. A second questionnaire was sent to all students during the course and again at its conclusion in order to assess changes in attitude as the study progressed.

The grade point averages of the study and the control groups, which were matched at the commencement of the study, were compared at the time of final assessment to determine if there was any significant difference between the two groups.

A summary of all use of the electronic tutorial system was maintained automatically on computer files for later analysis. This summary included the type of message sent, the subject of the message, and the time of sending. This data was used to assist in establishing a pattern of use of the electronic tutorial system.

A general questionnaire regarding computing and keyboard skills was given to all students in the Remedial Law course.

RESULTS

A study group of 7 students was selected from the overall course enrolment of 57 students. Each of these 7 students had been matched in age, sex, location, and ability as measured by grade point average (G.P.A.) with students in a control group. The average G.P.A. of the study group was 2.57 and that of the control group was 2.54 (possible range 0–4). The overall class G.P.A. was 2.36. The study group consisted of 3 males and 4 females with ages ranging from 51 down to 24 years and an average age of 34. Four of the students were country-based and 3 were in the metropolitan area of Sydney.

The initial questionnaire sought to establish their level of keyboard skills, and previous experience with computers.

REVIEW OF RESPONSES

Five members of the study group claimed to be able to type proficiently, one member claimed to be a "2 finger" typist and the other student had no keyboard skills. Similarly, the questionnaire for all students in the general class group showed that approximately 80% claimed proficiency, 20% claimed to be "2 finger" typists and 10% had no keyboard skills.

Four members of the study group had never used computers, one had limited experience of using a microcomputer, one hade regular experience of using a microcomputer and the other student claimed regular use of both terminal and mainframe computers. Responses from the general class group indicated that 20% had never used computers, 60% had limited experience of using a microcomputer or terminal, 10% were confident users of microcomputers and 10% claimed to be regular users of mainframe terminals and microcomputers.

The following responses to the questionaire were relevant to the design and operation of an electronic tutorial system.

The students listed the main disadvantages they had identified in previous external courses at the university.

- Problems of lack of contact with tutors.
- Delays in return of assignments and the accompanying feedback provided.
- Lack of interaction with other students.
- Residential schools with no clear objectives being given well in advance of the school.
- The danger that students would miss the "hidden agenda" in a course because of lack of contact with students and staff.
- Domination of on-campus tutorial groups by a few members.
- Being unable to reach tutors by phone and feeling unwilling to intrude on their time anyway.

When asked to consider the advantages of external study students nominated:

- Ability to do everything in their own time and at their own pace
- Non-attendance at lectures
- Freedom and flexibility of study hours
- Ability to determine own study program and adjust when necessary to take into account other priorities
- The fostering of self-reliance, and reliance on one's own judgement and understanding
- The encouragement for students to work things out for themselves
- A greater opportunity available for personal reflection on course materials.

Asked to identify the problems they anticipated in using the electronic tutorial system responses from study group members included:

Understanding the terminology and sequence of steps to be followed.
Initial use of software and different function key arrangements.
Fully understanding and taking advantage of the system.
A concern about lack of typing skills.
Lack of technical advice if problems emerged.
A concern whether they would disappoint the rest of the group.

USAGE OF THE SYSTEM

Following the training day which had sought to quickly establish a minimum level of keyboard skills and some ease with the microcomputers, several students required assistance with a range of minor problems which emerged. However the enthusiasm of the student group provided sufficient encouragement from them to carry on despite these early difficulties.

Overall 66% of connections to the tutorial by students occurred after 5.00 p.m. 22% of these connections were between 10.00 p.m. and 11.00 p.m. and 6% were between 11.00 p.m. and midnight.

34% of the connections were in the morning and normal working hours.

A survey of student reaction to the system mid-waythrough the project produced the following comment:

> "This is now my fourth year of studying externally, so I'm used to working alone."
>
> One of the two tutors commented:
>
> "We are learning how to ask questions in this format (shorter ones, with a variety of possible responses, rather than multi-part ones)." "Those of you without previous experience in computers are presumably obtaining a skill which you have not previously had, an intangible benefit which is important as the practice of law in heading in this direction."

The most enthusiastic participant was a student who indicated a strong background in computing. Very mobile because of his commitment as Director of his own business which had a number of regional offices, this student took his Teleterm with him and connected from a wide variety of locations. He adopted a very encouraging and supporting role with the other members of the experimental group.

DISCUSSION

Experience with this initial operation of the electronic tutorial system has identified certain advantages of the system and has also highlighted a number of problems.

The electronic tutorial reintroduces the feeling of discovery or group learning for distance education students. The responses from different students, and the comments by the tutor can be considered at the students' leisure, followed up in the reference texts, and then a careful comment can be made to be received by all students. It allows this considered response to be made to matters raised in the tutorial because of the increased time available to consider the issues.

Students who are inclined to be reticent to speak in a live tutorial find it easier to contribute to an electronic tutorial. This is consistent with published experience in the operation of electronic conference systems where a dominant personality is not in a more privileged position to communicate than the other participants (Parker and Olgren, 1984).

A normal tutorial is limited in time, and all students do not have equal opportunity to participate in discussion. The electronic tutorial is available at all times during the teaching semester and all students have equal access to enter their questions and answers.

The electronic tutorial experienced difficulties of a procedural nature and with the reliability of the system. The tutors and students were unfamiliar with the mode of operation. There was an initial tendency for the tutors to propose matters for discussion that were lengthy and contained a number of issues and questions. It was difficult for the students to respond without submitting a major essay. Good conferencing practice suggests that questions should confine themselves to a single issue which allows the participants to focus their responses in the ensuing discussion. The students and tutor realised this as a result of their early experience and modified the style of communication. Such experience suggests that there is need to advise users of the system on appropriate technique. These may be subject dependent.

The participants also experienced difficulty with equipment failure. The telephone lines were often unreliable and the transmission of characters was corrupted. This not only made some of the material difficult to read but, at times, caused the system to disconnect or made it difficult to send single character commands to the computer.

The computer used to operate the system was based on old technology. At the halfway point of the study the computer developed a fault that could not be remedied and caused major disruption. Fortunately the system was designed to be "portable" and it could be returned to a fully operational state on another campus a short time later. However, this did cause a loss of momentum in the level of contribution. In future, the system will operate on a reliable computer with communication via AUSTPAC, the PTT supported packet switching system which provides error free transmission (Tran and Northcott, 1985).

CONCLUSION

This initial project has demonstrated the feasibility of operating an electronic tutorial system for distance education students with no prior experience of this technology. The qualitative assessment of the outcome is sufficiently encouraging to broaden the study to other academic areas. The experience of this system will allow certain modifications to be made for improvement. The effect of the system on academic achievement as measured by grade point average will be reported when available.

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Partnership with aboriginal peoples: Some implications for distance educators

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OBJECTIVES

This paper has two objectives: to define and differentiate between two frameworks for providing education for aboriginal peoples in Canada, *assimilationist* and *interactional;* and to suggest some implications for distance educators of working within an interactional framework, drawing examples from some recent work at Athabasca University.

ASSIMILATIONIST AND INTERACTIONAL FRAMEWORKS

Until very recently, aboriginal peoples within Canada have been expected to enter and assimilate into the so-called mainstream of Canadian society. This expectation has generated countless disputes between a government pursuing the assimilation of aboriginal people and the elimination of their rights, and aboriginal populations intent upon preserving their identities and rights. Education is a major arena in which this ongoing battle has been fought, and in which assimilationist policies have failed most dismally, in spite of the existence and proximity to native populations of many schools, institutions and programs. Physical proximity does little to ensure psychological or socio-cultural proximity.

There is evidence, however, in both political and educational arenas, that a major shift is underway. Past patterns of relationship are giving way to a healthier and more demanding partnership. On the political front, native peoples have fought for and won the enshrinement of native rights in the Canadian Charter of Rights of 1982. And in education, it appears that the assimilationist framework, which rested on the assumption that aboriginal traditions were bound to die out, is gradually giving way to what we propose to call an *interactional* framework, with its associated premise that aboriginal traditions are "dynamic, adaptive and adapting, not limited to the past" Couture 1985:6). Intrinsically valid and creative, aboriginal traditions are capable of generating intiatives necessary to ensure and strengthen a people's survival.

Aboriginal peoples are unanimous in declaring their right and aspiration to take "things" (education, social services, industry, local government) in to their own hands, and their conviction that education must be involved in transferring this control to the people (Archibald 1986; Cardinal 1977; Couture 1979; Kirkness 1986; National Indian Brotherhood 1973). As a consequence, a new kind of education is needed, one sensitive and responsive to this shift. Aboriginal groups want education that will benefit the people collectively, and that will have people as the most important element.

This assertion of native rights presses upon Canadian society and the educational institutions it supports a two-fold challenge: first, to re-examine the validity of past assumptions and current practices; and second, to evaluate these assumptions and practices, in terms of their contribution to a socio-economic development formed by the aspirations and rights of aboriginal peoples. An interactional framework calls upon Natives and Euro-Canadians to come together to determine effective solutions to the pressing social and educational needs of native people.

IMPLICATIONS FOR DISTANCE EDUCATORS

What implications does such a framework have for distance educators? The remainder of this paper will suggest several, based on Athabasca University's experience since the mid-1970s in providing programming for native people.

As the growing literature on distance education for aboriginal peoples suggests, distance educators are frequently called upon by aboriginal groups to provide courses and services at a variety of levels (e.g., Blood 1985, Lipka 1985, Robertson 1985, Spronk and Radtke 1987), in part because distance modes are more likely than conventional modes to offer flexibility and personal autonomy to the learner, and cost efficiency to the administrator (cf. Carter 1982, Perraton 1983). Certainly native groups appear to perceive Athabasca University as more flexible than its conventional counterparts because of its distance education mode and its openness. Because "off-campus" delivery is AU's typical mode, and because breaking down the barriers that stand between adults and university education is written into AU's mandate, faculty and administrators need not be convinced that taking courses to native communities is anything out of the ordinary.

Yet even distance educators, at least those at AU, have discovered that in providing courses for native people, they are engaged in something far from ordinary, and that in order to operate effectively within an interactional framework with native groups, they must question and reassess many of their assumptions.

THE INTERDEPENDENT LEARNER

Primary among these assumptions is that of the autonomous or independent learner, on which AU's models of course development and delivery are based. AU courses are designed for individual learners who work at their own pace, assisted by a telephone tutor and by phone-in or walk-in counselling and advising services. This mode works moderately well for "mainstream" home study students; after a decade and a half of tinkering with course development systems and support services to students. AU's course completion rates are edging toward 50 per cent. For native students, however, this independent mode works not at all. Reasons range from the absence in many native homes of telephones and private, quiet study spaces, to a marked preference on the part of native students to study in the context of peers with whom they share a distinct cultural heritage. As a result, native run educational institutions have pressed upon AU the need for a mode of delivery other than home study.

As detailed in other papers (Minnis 1986; Spronk 1985), native students are now provided with a classroom tutor whose job is to interpret and explain course content, establish a pacing schedule for groups of students, and provide individual tutorials outside normal classroom hours. By means of this personalizing of delivery of homestudy packages, and development of a climate conducive to learning, with an emphasis on dialogue, drop-out and absence rates have been reduced, and students have become more articulate and vocal. Recent data suggest that the completion rates of native students in this mode match those of the overall AU student population. Indeed, given native students' lower levels of education upon entry and typically younger age, they could probably be considered as having bettered the overall average (Hotchkis 1987).

LEVELS OF ADAPTATION

University faculty and administrators have acknowledged that this approach to delivering courses to native groups is more or less necessary for success. What is challenged now is the assumption that the format and content of course packages need not change appreciably when delivered to native groups. At present, "mainstream" students and native students receive the same packages of AU course materials. Written with the Euro-Canadian, homestudy student in mind, they come in glossy, bound formats, which assure students that they are getting a quality product, but also make anything but total revision difficult.

When students in a classroom setting open these study guides and readers, they find an array of devices such as questions to be used as note-taking devices, suggested points to be discussed with tutors, and quizzes to be administered by the tutor over the phone. These strategies work well in guiding individual students through the course, but are not particularly useful in a classroom.

With the agreement and cooperation of the faculty member who has overall responsibility for a given course, an instructor in a native classroom can deal more or less readily with features like tutor quizzes, by substituting other means of evaluation. More problematic is the content of the courses, which is more or less culture-bound, depending on the subject area. Instructors with experience in native communities can adapt courses somewhat as they go along, to make them more relevant to the native context. Again this assumes the cooperation of faculty supervisors who will allow instructors this freedom. Minor changes, such as in the examples used to teach concepts, present little problem. Even the most facilitative supervisor, however, is reluctant to allow instructors to tamper too much with a packaged course, especially in the *ad hoc* way in which the changes tend to get made, given constraints of time and funding. Faculty members, as course authors, invest a great deal of time and care in developing integrated learning packages, and are understandably reluctant to see that integrity destroyed.

There is another, more deep-seated, reason, however, for faculty members' suspicion of the kind of revisions required of their courses by the native setting. Within an interactional framework, a confrontation of sorts is unavoidable between academics and learners who come from distinct cultural traditions. As AU exposes its courses to native students, the cultural assumptions and biases are revealed. For example, native institutions are run efficiently and effectively without recourse to "management by objectives" or the confrontation approach advocated in western-based courses in management. A history of Western Canada written from the perspective of aboriginal peoples differs sharply from one written from the viewpoint of the non-aboriginal population settled on traditional aboriginal territory.

In such instances, what the interactional framework calls for is a revision of courses that compares and contrasts native and non-native values, practices and viewpoints. Such a revision will explicitly reveal the cultural assumptions, native and non-native, that are built into any given course. The result of such a revision should be a *regeneration* of courses that would benefit all students. Native leaders have repeatedly asked us not to water down our courses to meet their needs, nor to produce courses with exclusively native-related content, since such courses have no currency and open no doors in the "white" world in which they must operate. Rather, these leaders have challenged us to expand our paradigms to include them as well as ourselves. As one leader phrased it, what is needed are courses that will equip learners, native and non-native alike, for both Wall Street and the Reserve.

Two projects may soon provide a context within which we can atempt a creative resolution to the tension between the needs of culturally distinct learners and faculty members on the one hand, and the academic standards of university education on the other. First, a proposal for a Special University Access Project calls for the development and delivery, in a number of remote native communities, of degree programs in band and small business management, community development and addictions counselling. The proposal, which received the unanimous approval of AU's decision-making bodies, was unique for AU, and probably for most other Canadian universities, in that it was worked out by a Joint Task Force consisting of university personnel and leaders of native political and service groups throughout northern Alberta. This proposal entails the joint development of university level programs that are culturally sensitive to the social heritage and aspirations of native peoples. Second, at the time of writing the authors have a proposal before AU's faculty councils for a Certificate in Health Development Administration, worked out jointly between AU, a council of five Indian bands, and the federal Department of Health and Welfare.

Both proposals include a model of adaptation of existing AU courses that would entail hiring instructors for a number of months preceding and following the instruction period. During the initial period, under the supervision of AU course coordinators, instructors would make whatever adaptations were required in the course they were hired to teach. They would then test these adaptations in the classroom, and in the remaining three months commit them to paper in the form of an "adaptations manual", so that the adapted course package could be used again in another community, by another instructor.

Ideally, this process of adaptation or "regeneration" should involve faculty and instructors in the joint creation of course content between and across cultures, which is, as far as we are aware, an uncharted area for educators, whether at a distance or in conventional modes. Experience in working within an interactional framework, however, leads us to expect that joint creation will commit us to opening up our most cherished assumptions about our academic disciplines and our pedagogy to scrutiny and challenge of the most fundamental kind. Among the issues that will have to be faced is native spirituality, which is fundamental to native ways of knowing about the world. What role are we, as Euro-Canadian, educators and academics, willing to assign to prayer and meditation as part of an addictions counselling degree program? How will our native partners react to our insistence that if we must open our assumptions about the world to scrutiny and challenge, so must they?

At this point we have no answers. What we do have, as a result of having worked within an interactional framework with our native counterparts, are some significant and increasingly powerful questions. Our hope, based on the assurances of our native colleagues, is that as our questions grow, so too does our wisdom.

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Education and the individual student: the convergence of distance and conventional education

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Distance learning has developed rapidly because it serves large numbers of students, often geographically dispersed, effectively and efficiently. Conventional higher education which, at least in the United States, is increasingly constrained by declining resources and concerns about effectiveness, has begun to focus on many of the pedagogic issues which have long concerned distance educators. The common focus is the successful education of the individual student within the student's own context.

Distance education has always recognized that it must deal with students as individuals because of their isolation. Though much distance education has developed on an "industrial" model to serve large numbers of students, educators recognize that some of the "assembly line" implications of that model had to be resisted. In launching new programs, especially those with a substantial investment in technology, the initial focus is understandably on the creation of delivery systems and preparation of materials. Yet most distance education programs attempt at some point to personalize education. Flexibility of time and place recognizes individual differences and permits access for many, but the active engagement of the student in learning requires more. The most common way to personalize learning further is some form of face-to-face contact, either tutoring or counselling. This aspect of distance education comes closest to traditional residential education, whether students meet in a group with the tutor or in individual counselling sessions.

Some distance educators insist that face-to-face personal encounters are essential but others consider they compromise the aims of distance education. They suggest that education at a distance is not entirely adequate, and in some cases such face-to-face contact is virtually impossible.

Since direct face-to-face contact resembles traditional classroom practice, current concerns about educational effectiveness in conventional circles are instructive. In the United States numerous reports have descried loss of quality and effectiveness, the separation between the curriculum and the rest of students' lives, and the institutional emphasis on scholarship at the expense of good teaching. (National Commission, 1983; NIE, 1984; NEH, 1984; AAC, 1985; AASCU, 1986). These reports assume the classroom as the dominant mode of instruction. They express concern about students' lack of full engagement with their education not only in terms of content mastered, but of values learned, and cultural perspectives acquired. More recently a number of educators have begun to make recommendations about modifications to foster more successful student engagement (Gamson, 1984; Astin, 1985; Boyer, 1987). These recommendations are not limited to one type of institution or specific academic areas; they are concerned with the general state of higher education in the United States. (One recent report is called simply *College: The Undergraduate Experience in the United States* (Boyer, 1987?).

So classroom setting, or even face-to-face contact in some other format (tutorial or advisory sessions) does not in itself ensure quality or effectiveness of learning. Instead, both conventional and distance educators are emphasizing the importance of engaging students in ways that involve them actively in learning. (The similarity of these recommendations may be one of the strongest arguments against the establishment of distance education as a separate discipline.)

These recommendations are (1) students' engagement in the discourses of learning, (2) connecting of learning to students' personal contexts, and (3) offering a range of learning modes. As to the first, there is increasing recognition of the social nature of knowledge. As Thomas Kuhn put it, all knowledge "is intrinsically the common property of a group" (Kuhn, 1962). Consequently students must engage with that group. As William Perry argues, education today involves not assimilation of knowledge, but assimilation into a community of knowledgeable peers (Perry, 1970).

This leads to a common concern of some kind of engagement with a community of learners: through academic dialogue with a faculty tutor, collaboration with fellow students, or some other communicative exchange (Wright, 1987; Astin, 1985; Chickering, 1987; Holmberg, 1986). Such communities of learners develop students' awareness of the interrelated and interdependent nature of knowledge and, paradoxically, makes them more effective as active, independent learners. The key is the autonomy with which students conduct their own studies. In fact it seems clear that the "community of learners" can be metaphorical as well as literal. Some such communities rarely or never meet face to face. Both Bruffee (from a traditional perspective) and Rebel (a distance educator) point to the potential shortcomings of classroom meetings in limiting autonomy and fostering a non-collaborative competition (Bruffee, 1987; Rebel, 1987).

Students come from a range of backgrounds and "learning communities" are an effort to create a context conducive to learning.

Recently both traditional and distance educators have recognized that the context for learning to be fully effective, must include practical experience familiar to the student. This will reinforce the learning process through application — problem-solving, simulations, apprenticeships, or actual "real world" operation — which provides bridges from old learning to new and learning resources for fellow students and even faculty (Holmberg, 1986; Jarvis, 1987; Ingham, 1987; Boyer, 1987; Chickering, 1987; Wright, 1987; Rebel, 1987). Linking studies to as much of students' full context as possible enhances, intensifies, and integrates new learning and skills within the texture of their lives.

Most educators now agree that there are many roads to learning and that the diversity among the learners themselves should be reflected in the learning modes available. At this point we find a common interest in individualizing instruction and in shaping both content and pedagogy to the needs of individual students (Boyer, 1987; Chickering, 1987; Astin, 1985; Holmberg, 1986; Wright, 1987; Rebel, 1987; Bruffee, 1987). One reflection of this is the wider use of "the learning contract" which individualizes content, pedagogy, time, and resources. The argument for individualization is advanced not only by distance educators like Börje Holmberg, but by leaders of mainstream education, such as Alexander Astin. Astin argues that the instructor should "focus less on content and on teaching techniques and more on what students are actually doing..." This is very close to the facilitative model of tutoring advocated by many distance educators.

In practice, then, we should hope for both dual mode institutions, in which students can choose between classroom lectures and prepackaged learning at a distance and also the capacity further to tailor either of these to the needs of individual students. The current interest in "modularizing" distance learning materials to increase their adaptability is an example of such movement; as are efforts to restructure the relationships between students on campus, the content they study, and the context in which they will use it. There is agreement on the need to design assignments and assessment to engage and provide feedback to students, thus involving them individually, actively, and deeply in learning.

Whether faculty and students are face to face or communicating with the latest technology, the fundamental issues and goals are the same. Keeping the real learning needs of students as the primary focus will ensure not only movement towards those goals, but a merging of the efforts of all educators.

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Learning economics through televised instruction: An empirical analysis of the economics USA project

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INTRODUCTION

The increasing importance of nonresidential college degree programs in the United States has led to the development of a growing number of professionally produced telecourse series. These courses, generally developed and produced by large educational foundations and consortia of colleges and universities, have a technical quality superior to earlier generations of televised instruction.

Economics USA was developed and funded by the Annenberg/Corporation for Public Broadcasting Project and was first aired in the fall of 1986. The *Economics USA* course centers around 28 half-hour video lessons that cover both the macro and micro aspects of the traditional Principles of Economics course sequence taught at the sophomore level in most U.S. colleges and universities. Each video lesson takes the form of a television news report with a correspondent presenting facts and issues about a major economic topic. Not only is contemporary and historical footage liberally used, but interviews are conducted with key participants in the events covered. Several times in each lesson an academic provides economic analysis and interpretations of the issues. A standard principles of economics textbook was modified to correspond to the video lessons. Additionally, audiotapes, a telecourse study guide, and a text review guide were developed to provide students with a comprehensive package of learning materials. The final budget for the entire course is estimated at more than $2.6 million.

Nearly 100 institutions used the course during the first semester it was available (Fall 1986), with almost 1,600 students enrolled. The viewing audience for the 28 video lessons was not confined to students seeking college credit, but also included persons viewing for self-improvement. Given the large number of students taking the course for credit and the size of the potential viewing audience, the importance of determining the effectiveness of *Economics USA* becomes obvious.

THE EXPERIMENT

An evaluation of *Economics USA* was conducted at Western Illinois University to determine if students in this course learned as much as traditional students in normal classrooms. The *Economics USA* telecourse was offered by WIU during the 1986–87 academic year with the video lessons broadcast in weekly installments. Using a classic experimental design, four experimental groups and one control group were selected.

DISTANCE — A "traditional" telecourse format enrolling external degree students. Students and teacher are geographically separate. All video lessons are viewed at home.

OFF-CAMPUS — A telecourse class for nonresident students in the local geographic area of the University.

ON-CAMPUS — A class of traditional college students enrolled on-campus taking the telecourse as part of their degree program.

TEACHERS — A class of professional teachers from the local geographic area taking the telecourse in preparation for teaching economics at the elementary and secondary levels.

CONTROL — A traditional lecture course in the principles of economics. Classes meet for fifty minutes three days a week.

In order to avoid instructor bias caused by variations in teaching style and content selection, one teacher was charged with overseeing the five class groups. Each class was structured to parallel the other classes with regard to course objectives and grading procedures. Students in all groups received identical sets of homework and took the same midterm and final examinations.

The following five hypotheses were developed and tested:

1. Completion of a course of study in elementary economics will result in measurable increases in economic knowledge and reasoning.
2. The On-Campus class will demonstrate a significantly greater degree of learning and attitudinal change relative to the Control class.
3. Increased student-teacher contact and instructional support will result in increased student learning for the nonresident groups.
4. Increased contact and support will result in more positive attitudes toward economics as a discipline.
5. The study of economics will result in increased verbal and quantitative skills for all student groups.

In order to evaluate these hypotheses, information was collected from each student using standardized examinations and questionnaires. The course's effect on economic learning was estimated using a pre- and post-course administration of the Revised Test of Understanding in College Economics (TUCE).

The TUCE is a 30 question multiple-choice test that uses three types of questions to measure different levels of cognitive economic learning. These are recognition and understanding, explicit application, and implicit application. Each category is given equal weighting on the TUCE (10 questions per category).

The influence on student attitudes toward the economics discipline was measured using the Attitudes Toward Economics (ATE) dimension of the Survey on Economic Attitudes.

The two-part School and College Ability Test (SCAT) was used to estimate the course's impact on general verbal and quantitative skills.

THE RESULTS

Economic Learning — To test the first hypothesis that the course would generate economic learning, t-tests were conducted to determine significant differences between pre- and post-course TUCE mean scores. The resulting t-values and their level of statistical significance are reported in Tables 1 and 2 (the data reported for Total in these Tables result from pooling the results across all groups). Statistically significant differences exist between the pre- and post-course overall TUCE score for each group during both semesters. Therefore, the statistics suggest that students in the *Economics USA* telecourse sections demonstrated significant *absolute* improvements in their overall economic ability.

For both semesters, the On-Campus and Control groups demonstrated statistically significant improvements in each of the three question types. The Off-Campus and Teachers groups also show significant improvement across the board for the Fall semester. For the Fall, the only instances where no significant improvements are found occur in the cases of Explicit and Implicit Application for the Distance group.

The only clear pattern observed is that significant improvement in Explicit Application ability was not found in four of the ten groups tested in the two semesters. Further, in each case the lack of improvement in Explicit Application occurred in *nonresident* telecourse groups. This suggests a possible weakness of the telecourse material to impart the ability to solve explicitly stated economic problems with standard economic tools and techniques. Such a weakness may occur as an externality caused by the material's heavy focus on "real world" relevance and the case study approach. While graphical techniques are used to demonstrate relationships in the video lessons, students are forced to learn the graphical manipulations through the use of the course's print material. Thus, telecourse students in *Economics USA* receive very little instruction on the use of common economic techniques applied to explicit problems.

The telecourse groups with significant improvements in Implicit Application scores recorded a positive change that exceeds that registered by the Control groups. Thus, students exposed to the "real world" case study approach of the *Economics USA* video lessons appear better able to recognize and solve problems with the economic relationships implicitly stated. This conclusion is strengthened by the statistical results shown in Tables 3 and 4. In order to evaluate the *relative* effect of the telecourse material, t-tests were conducted to uncover any statistical differences between the mean improvements in the TUCE scores of the experimental groups and the Control group. The results of these tests are reported in the first portion of Tables 3 and 4. As can be seen from the Tables, significant differences are found in the Fall between both the On-Campus and Teachers groups and the Control group with respect to improvements in Implicit Application. The On-Campus group improved their average Implicit Application score by 2.000 points while the Teachers score rose on average by 2.045. These levels of improvement compare to 1.040 for the Control group (see Table 1). The results thus indicate that the *Economics USA* material has a strong positive impact on student ability to recognize and solve economic problems when they are not explicitly stated. The "real world" flavor of the case study approach appears to strengthen student insight into economic problems when general issues are discussed.

Changes in Attitude Toward Economics — The mean differences between the pre-course and post-course ATE index for the student groups are shown in Tables 5 and 6 for each semester. These tables report the change for each group along with the resulting t-values testing for significant differences between pre- and post-course attitudes.

The Fall semester results (Table 5), indicate that positive changes in attitude were achieved for the Control, On-Campus and Teachers groups while negative changes resulted in the Distance and Off-Campus groups. The only statistically significant differences occur for the Control and Teachers groups.

Turning to the attitude results for the Spring semester (Table 6), the Control, On-Campus and Off-Campus groups all reported a decrease in their attitude index while the Distance group reported no change at all. The only improvement in ATE for the Spring semester is recorded for the Teachers group. Tests for statistical differences between the pre- and post-course attitude measures show that only the Control group's negative movement in ATE is significant.

General Verbal and Quantitative Skills — The mean improvements in SCAT scores are shown in Tables 7 and 8 along with the results of t-tests for statistical differences between pre- and post-course scores.

The data reveal that all groups entered the course each semester with relatively similar verbal and quantitative backgrounds. It was assumed that the nonresident telecourse groups might have been at a disadvantage with regard to quantitative abilities due to longer periods between formal training in mathematics and enrollment in *Economics USA*. This, however, was not the case according to the pre-course SCAT results. As expected, the Teachers group reported the highest verbal and quantitative pre-course scores both semesters.

Looking at the change in SCAT scores, it is apparent that relatively small differences were recorded in most instances, and positive changes dominate overall. During the Fall semester, statistically significant improvements in verbal skill were found for the Off-Campus, On-Campus, and Teachers telecourse groups. While negative movement in quantitative scores was reported for the Distance and Off-Campus Fall groups, no statistically significant differences were uncovered by the t-tests. However, the negative change in quantitative ability for the Distance group is statistically different from the positive change observed for the Control group (see Table 3).

For the Spring semester no significant changes are found in verbal SCAT scores for any group. It is of interest that the only significant improvements in group quantitative ability occur during the semester that microeconomics is taught. Microeconomics is generally more mathematical and graphical in nature than macroeconomics and thus may force students to sharpen their quantitative skills to a greater degree.

No significant differences were found between the Spring experimental and Control group SCAT changes. (Table 4)

The results for the hypothesis that completion of the course would improve student verbal and quantitative ability are thus mixed. The macroeconomics course seems to have had a greater impact on verbal skills, and the microeconomic course a greater impact on quantitative skills. Improvements in skill were not observed across all groups, however. Significant improvements in SCAT scores were not recorded for the Control group either semester. This suggests that the *Economics USA* course may have an advantage in improving general verbal and quantitative skills relative to a traditional course.

CONCLUSIONS

The impact of the *Economics USA* telecourse on student learning and attitudes can be briefly summarized with respect to the stated hypotheses.

All sections studied did demonstrate significant improvements in their overall understanding of economics. However, differences across question types were observed between groups. There is some indication that telecourse students achieved greater improvement in their ability to solve implicitly stated economic problems than students in a regular class. Further, general telecourse students appear to score lower on explicit problem solving than regular students.

Hypothesis two must be partially rejected. While the On-Campus group demonstrated significantly higher Implicit Application scores on the TUCE for the Fall semester, no significant differences are found in the other categories of economic learning or in attitude. No differences in any area are uncovered for the Spring semester. Thus, it appears that the *Economics USA* telecourse material performs as well as more traditional instructional devices in the normal classroom.

The results for the third and fourth hypotheses are somewhat mixed. A direct relationship between student-teacher contact and student learning and attitudes is not clearly seen in the data. The magnitudes of changes in TUCE scores are fairly comparable across groups. Attitudes appear to be more affected by the degree of student-teacher contact. Telecourse students generally left the class with lower attitude levels toward the discipline than traditional students.

Finally, the results for the fifth hypothesis are also mixed. The Fall semester appears to have had a stronger impact on verbal achievement relative to quantitative achievement. Just the opposite is found in the Spring semester. This finding is likely the result of the differences in the type of material covered during each of the respective semesters.

Overall the *Economics USA* telecourse performed quite well. Students taking the telecourse received an educational experience comparable to that of students who took a more traditional class.

TABLE 1

MEAN IMPROVEMENT IN RAW TUCE SCORES BY GROUP
Macroeconomics Fall 1986

	All	Recognition	Explicit	Implicit
Distance	4.333	2.667	0.111	1.556
	(2.354)**	(3.024)**	(0.130)	(1.730)
Off-Campus	5.391	2.696	1.478	1.217
	(5.136)***	(6.916)***	(2.699)***	(2.826)***
On-Campus	5.389	2.250	1.139	2.000
	(6.291)***	(4.909)***	(3.297)***	(5.445)***
Teachers	6.818	2.682	2.091	2.045
	(6.751)***	(4.464)***	(6.015)***	(5.012)***
Control	5.180	2.560	1.580	1.040
	(9.627)***	(10.267)***	(6.030)***	(2.992)***
Total	5.471	2.529	1.436	1.507
	(14.022)***	(13.138)***	(8.120)***	(7.819)***

() t-values test for significant improvement in raw score (post – pre)

** significant at the .05 level

*** significant at the .01 level

TABLE 2

MEAN IMPROVEMENT IN RAW TUCE SCORES BY GROUP
Microeconomics Spring 1987

	All	Recognition	Explicit	Implicit
Distance	2.571	0.714	1.000	0.857
	(2.870)**	(1.179)	(1.225)	(1.441)
Off-Campus	4.500	1.800	0.800	1.900
	(5.783)***	(2.290)**	(1.272)	(4.670)***
On-Campus	4.059	1.559	0.912	1.588
	(5.206)***	(4.471)***	(2.351)**	(4.626)***
Teachers	3.067	1.133	0.600	1.333
	(3.691)***	(2.241)**	(1.457)	(4.641)***
Control	3.659	1.773	0.659	1.227
	(6.104)***	(6.477)***	(2.114)**	(4.050)***
Total	3.709	1.555	0.764	1.391
	(10.089)***	(8.374)***	(3.925)***	(8.025)***

() t-values test for significant improvement in raw score (post – pre)

** significant at the .05 level

*** significant at the .01 level

TABLE 3

COMPARISON OF IMPROVEMENT BETWEEN EXPERIMENTAL AND CONTROL GROUP SCORES: INDEPENDENT GROUPS t-TEST VALUES
Macroeconomics Fall 1986

	Distance	Off-Campus	On-Campus	Teachers
TUCE				
All	0.572	0.072	0.217	1.559
Recognition	0.154	0.417	0.636	0.223
Explicit	2.060**	1.321	1.036	1.116
Implicit	0.571	0.008	2.000*	2.045*
ATE				
Attitude	1.101	1.770*	0.241	0.915
SCAT				
Verbal	0.379	1.689*	2.639**	1.930*
Quantitative	1.842*	0.874	0.515	0.780

* significant at the .10 level

** significant at the .05 level

TABLE 4

COMPARISON OF IMPROVEMENT BETWEEN EXPERIMENTAL AND CONTROL GROUP SCORES: INDEPENDENT GROUPS t-TEST VALUES

Microeconomics Spring 1987

	Distance	Off-Campus	On-Campus	Teachers
TUCE				
All	0.700	0.639	0.414	0.521
Recognition	1.452	0.040	0.490	1.155
Explicit	0.403	0.196	0.514	0.101
Implicit	0.464	1.008	0.788	0.194
ATE				
Attitude	0.948	0.869	0.647	1.590
SCAT				
Verbal	0.042	0.588	0.742	0.457
Quantitative	0.407	0.794	0.802	1.100

* significant at the .10 level

** significant at the .05 level

TABLE 5

MEAN IMPROVEMENT IN ATE BY GROUP

Macroeconomics Fall 1986

Group	Change in attitude	t-value
Distance	–0.556	0.189
Off-Campus	–0.435	0.345
On-Campus	1.639	1.220
Teachers	3.818	1.825*
Control	2.020	2.179**
Total	1.636	2.602***

() t-values test for significant improvement in raw scores (post – pre)

* significant at the .10 level

** significant at the .05 level

*** significant at the .01 level

TABLE 6

MEAN IMPROVEMENT IN ATE BY GROUP

Microeconomics Spring 1987

Group	Change in attitude	t-value
Distance	0.000	0.000
Off-Campus	–0.400	0.375
On-Campus	–1.029	1.274
Teachers	0.267	.343
Control	–1.705	2.538**
Total	–1.000	2.463**

() t-values test for significant improvement in raw scores (post – pre)

** significant at the .05 level

TABLE 7

MEAN IMPROVEMENT IN RAW SCAT SCORES BY GROUP

Macroeconomics Fall 1986

	Verbal	Quantitative
Distance	0.667 (0.450)	–4.000 (0.977)
Off-Campus	1.783 (2.633)**	–0.870 (0.376)
On-Campus	2.639 (2.304)**	0.361 (0.314)
Teachers	3.045 (1.87)*	2.682 (1.247)
Control	–0.100 (0.123)	1.120 (1.195)
Total	1.457 (2.847)***	0.514 (0.710)

t-values test for significant improvement in raw scores (post – pre)

** significant at the .05 level

*** significant at the .01 level

TABLE 8

MEAN IMPROVEMENT IN RAW SCAT SCORES BY GROUP

Microeconomics Spring 1987

	Verbal	Quantitative
Distance	0.857	0.857
	(0.915)	(1.216)
Off-Campus	1.800	1.300
	(1.536)	(1.816)*
On-Campus	–0.147	–0.971
	(0.150)	(0.691)
Teachers	0.133	1.467
	(0.216)	(2.442)**
Control	0.773	0.182
	(0.983)	(0.281)
Total	0.500	0.145
	(1.091)	(0.280)

t-values test for significant improvement in raw scores (post – pre)

* significant at the .10 level

**significant at the .05 level

The Open College of the United Kingdom

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I am writing this paper on 22 September 1987. Yesterday the Prime Minister, Mrs Thatcher, was interviewed on the first television programme for the Open College. Last night Government Ministers, senior civil servants, captains of industry, heads of broadcasting companies and leaders in education and training celebrated the launch of the UK's next major development in open learning. A three page special supplement in *The Times* included welcoming advertisements from publishers, broadcasters, the Engineering and Construction Industry Training Boards, City and Guilds of London Institute, the National Extension College and the Open University. We now wait to see whether we reach our first year target of 50,000 students. (Yesterday's publicity brought over 6,000 requests by telephone for the prospectus).

WHAT IS IT FOR?

To improve vocational training throughout working life. The UK has a poor record in adult training. Of ten million adults working in private industry in 1985, 69% had received no training in the previous year. The training that was produced was often considered to be inadequate.

HOW DID IT START?

The Manpower Services Commission (MSC), under the Department of Employment, is the UK's largest training agency. Between 1983 and 1987 its Open Tech Unit spent £45 million on projects of technical and vocational open learning, mostly on materials. In May 1986 MSC called together an expert group, including broadcasters, NEC, and OU, to look at the next steps. They recommended a "College of the Air", linking broadcasts, print materials and local and regional student services, concentrating on short courses for training in vocational skills. By September the Chairman of the Board of the independent company, now to be called "The Open College", was announced and the first advertisements for staff appeared. In January and February 1987 the first senior staff took up post, drawn from the BBC, the NEC and the OU. More have joined since, from Henley Distance Learning, ICI, ORT and so on.

HOW WILL IT WORK?

The Open College is not another large organization. For our courses, we commission TV and radio programmes, audio and video cassettes, practical kits, printed workbooks and readers, from experts. For the learners, we have negotiated local services on a self-financing basis from 350 Open Access Centres in existing public and private institutions across the UK. These centres provide a range of services, specified by ourselves, from information, guidance and counselling of enquirers, to handling payments when learners join, to recruiting, training and supervising tutors.

In addition to local level, Regional Managers with a small team of part-time advisors are visiting small, medium and large companies who are interested in developing their training programmes on open learning lines, often with in-company or in-house centres where their employees can take Open College courses. A further agency arrangement is for The National Distance Learning Centre which provides distance tuition for those Open College learners who are unable or do not wish to use the services of a local centre.

WHAT IS AN OPEN COLLEGE COURSE?

Our first 50 courses are at several levels, from basic skills (numeracy, literacy, keyboard), to advanced managerial. A typical course is planned to last about 30 hours, with workbooks, cassettes, two assignments for a tutor and two for the computer. The learner may receive a letter of course completion and accumulate credits towards a national qualification.

MARKET RESEARCH

Our preliminary market research has indicated that there is a substantial interest in the adult population, across social and economic groupings throughout the UK, men mainly from 16 to 44, women from 25 to 45. A potential of six million adults is indicated, and the Government have set a "modest target of 1 million adults in the first five years." Telephone interviews with 1200 employers suggested some dissatisfaction with existing open learning but high expectations for The Open College.

FUNDING

Preliminary pump priming by Government, £15 million over the next three years, is to lead to a self-financing operation. We have to raise our remaining income from fees, sales, sponsorship and especially co-funding and co-production of programmes and courses. Already Trust House Forte and the National Health Service have paid for a series of television programmes on "Catering With Care". Discussions are taking place with the top 200 companies (with 42% of the private sector employees) and the signs are encouraging once they have judged the quality of our courses and services.

THE FUTURE

September 1987 has seen The Open College open for business. We now have to see whether the United Kingdom can use this latest instrument for bringing vocational open learning into the home and the workplace. By the time of the OSLO Conference in August 1988 we shall have almost a year's experience to report on.

Survey of distance education in Indian schools

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Distance Education is already a legitimate mode of instruction in a number of Indian universities. The Schools of Correspondence Courses, University of Delhi introduced correspondence as early as 1962. It was introduced comparatively recently in Indian Schools and is now offered by two institutions in Delhi viz. the School of Correspondence Courses and the Open School.

Patrachar Vidyalaya (Correspondence School) was established in Delhi by the Ministry of Education. Government of India in 1968. Its main objective is to provide education to working adults, school drop-outs, housewives, defence personnel and other needy people. Admission to the School of Correspondence Courses is open to all irrespective of age, sex or nationality.

The School prepares students for the Secondary Examination (at the end of Class X) and Senior School Certificate Examination (at the end of Class XII) of the Central Board of Secondary Education, New Delhi.

The School provides instructional material to its students in the form of Correspondence Lessons, written by experts in a very simple language, on all the subjects chosen by the students. The Lessons cover the Course of studies prescribed by the Central Board of Secondary Education. The first package of study-material is given to the students at the time of admission. Other sets are sent by registered post soon after printing at planned intervals so that students can learn and assimilate the previous ones.

Exercises are appended to each lesson for further practice. The students are required to solve problems in the form of "Assignments". Their answers (called Response-Sheets) are sent back to the School and checked, corrected, evaluated and returned to the students and with suggestions for improvement. This is the most important part of distance education and every student must send the response sheets of the required assignments. Performance of the students is taken into account for internal promotion to the next higher class.

The Personal Contact Programme is an important part of distance education and classes are organised for students on Sundays and holidays between September and December every year. For final students i.e. Class X & XII, however, the school also holds Remedial Classes in January and February. The school prepares students for All India Secondary and All India Senior Certificate levels of the Central Board of Secondary Education.

The Open-School was established by the Central Board of Secondary Education in July 1979 as an alternative to formal schooling and makes education available through distance teaching methods at the secondary stage. It is designed for working adults, housewives, school drop-outs and second chance learners with emphasis on education of disadvantaged sections of society. It offers another chance for education. Through its print materials and personal Contact Programme the Open School takes education to the doorstep of the learner.

The aims of the Open School are to offer bridge/preparatory courses leading to the Secondary Level Course; Secondary, Senior Secondary Technical, Vocational and Life Enrichment Courses and to promote an open and distance learning through research, publication and dissemination of information.

The Open School has an open entry system with no upper age limit. It is the first institution in India to introduce the open entry system at the school level. Any person over 14 can join its school level courses, provided he is motivated, can read and write and has adequate ability to understand and benefit from the instruction imparted by the School.

The Open School provides a bridge course for those learners who do not have formal qualifications or have not passed class VIII but can read and write, know basic arithmetic and possess the competence equivalent to at least class V. It also provides Secondary Level Course/Core Course leading to Secondary School Examination Class X (Open School) of the Central Board for those learners who have passed class VIII from a recognised school.

The Open School provides a flexible scheme of studies under which learners can study the subjects of their choice. They can select one or more topics at a time and be free to learn at their own pace. A student must choose up to five subjects from the following: provided at least one of them is either Hindi or English. Hindi, English, Mathematics, Science (with/without Practicals), & Typewriting Hindi/English.

The Open School has designed a flexible examination system. Examinations are held twice a year in April and October. As many as nine (9) attempts in five years can be made from the date of registration to pass the required five subjects. Credits for subjects passed accumulate till all five are cleared. Instruction is provided through printed lessons where the subject matter is explained step by step in simple language. An attempt is made to make the material interesting, attractive and suitable for self-learning by including sketches, diagrams, pictures etc. wherever necessary. The Course in each subject is divided into 9/10; mailings. Each mailing consists of several lessons depending on the size of the unit. The lessons in a mailing have the following main features: (a) A brief introduction drawing attention to what the learners have already experienced or observed and leading them to the main topic. (b) Objectives detailing salient points that the learner would comprehend after carefully studying the lesson. Subject matter is split into topics, sub-topics and learning points with a step by step treatment for quick grasp and easy learning. (c) Significant points are highlighted in boxes to facilitate learning. (d) Intext and Terminal questions are provided in the lessons to strengthen, recapitulate and reinforce the points already learnt. (e) At the end of each mailing assignments are given which are known as Response Sheets. These are assessed and returned to the students with suggestions to help them judge their progress. Students can also get help from the teachers at Resource-cum-Study Centres or through correspondence with the Open School.

For further help Personal Contact Programmes for face-to-face teaching are held on certain Sundays and holidays at Resource-cum-study Centres at selected locations. Those who attend the contact programmes bear their own travel expenses and arrange their own accomodation. Attendance is, however, optional.

Many recognised institutions and voluntary organisations also provide help on a voluntary basis to students enrolled in the Open School. Such institutions are accredited by the Open School for sponsoring candidates. The Open School through its Student Sponsorship Scheme takes education closer to the learners by making use of the resources available within established institutions. Students of the Open School get themselves admitted in the accredited institutions nearest to their home to receive the benefits.

It is regrettable that in this age of sophisticated mass communication media, no serious efforts have been made to explore the use of audio-visual teaching media for distance education in Indian schools. Whereas lessons and books use only students' reading skills, audiovisual media stimulate other senses, provide higher motivation than traditional methods of instruction and make learning more interesting and pleasant. The most important of these media is television. Its main advantage is its accessibility. It reaches every home — and it can be entertaining and attractive. It can also make available resources that would be difficult to provide in any other way — such as films of overseas countries, ingenious and expensive graphics, and access to world leaders in politics and education. It is the duty of the Government to provide special channels for the educational programmes of distance education isntitutions. Although we have not yet been able to develop an effective television network, it should be possible to make a beginning. Television and radio programmes are a mainstay of the U.K. Open University which has broken new ground in education.

Much therefore needs to be done by the Central Board of Secondary Education and the Ministry of Education to streamline the system of distance education in Indian Schools.Liberal budgetary provision should be made for the development of ancillary services and mass communication media as an integral part of the correspondence courses.

The potential contribution of distance education for improving academic teaching in conventional universities

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MAXIMISING THE ADVANTAGES OF DISTANCE EDUCATION

This article deals with the potential contribution of distance education (DE) to the improvement of academic teaching in conventional universities. It focusses mainly on the experience of Everyman's University (EU), the Open University of Israel.

Distance educators tend to be on the defensive when comparing DE procedures with traditional university teaching (Jevons, 1984). There is often even an assumption that face-to-face learning should be used as a touchstone when designing courses for self-study (Perraton, 1983). The need to compensate for the shortcomings of DE is frequently discussed in the DE literature. But because distance learning opens up possibilities not available in more conventional settings it might be more constructive for distance educators to consider how to maximise the advantages of DE rather than focusing on how to minimise its disadvantages.

DE has the potential to widen and expand the significance of higher education in numerous ways. In this article we discuss briefly seven potential contributions of DE to improving the academic teaching of traditional universities.

(1) improving the quality of university level textbooks
(2) enhancing independent study
(3) improving the pedagogy of university teaching
(4) promoting inter-disciplinary courses
(5) contributing to inter-university collaboration
(6) advancing the integration of multi-media into the learning/teaching systems of the universities
(7) promoting research on adult learning.

IMPROVING THE QUALITY OF UNIVERSITY-LEVEL TEXTBOOKS

One feature which is common to almost all distance teaching universities (DTU) is the use of printed material as the main medium of instruction (Rumble and Harry, 1982). The design of learning materials at DTU requires a totally different approach from that required for preparing a lecture or writing a conventional textbook. Academics have always encouraged criticism of published research, but rarely does the criticism relate to the quality of teaching or study materials. In many cases the appraisal process of course proposals or curriculum packages is no more than "a rubber stamping formality at faculty or senate level which ensures the outward forms of proposal, title, syllabus and examination arrangements are consistent with the prevailing practices" (Adelman and Alexander, 1982:9). In contrast to the professional autonomy model of the conventional universities, many of the DTU use control procedures for the evaluation of self-study materials. The design and development of distance learning courses at EU, for example, are subject to several stages of quality control, from the very early phase of defining the theme of a specific course to its final stage of editorial and graphic layout (Guri, 1987).

A course proposal in EU is usually sent to three or four experts in the field, working at other Israeli universities or abroad. The advice of the outside experts provides different perspectives and helps EU's internal subject committees to discuss and criticise proposals constructively. The authors of the course proposals are also asked to write sample materials. This is because of a series of failures in the past, in which written units did not meet the structure and format requirements of instructional self-study units. Around 30 proposals are discussed in the various subject committees each year. Approximately 20 per cent are rejected on the grounds of inadequacy or poor quality materials, and another 20 per cent require redrafting. A course development generally takes 18–48 months, the greatest proportion of that time being devoted to the writing and rewriting of the course materials. Each study unit is evaluated by three to five counsellors, either internal staff or external experts. The evaluation aims to analyse the content and the instructional quality of the learning materials carefully and critically.

Such stringent quality control mechanisms used in the design and development of self-study courses contribute to the production of high quality university-level texts. EU's student body is not the only beneficiary of this process: faculty and students at the other seven Israeli universities (and even some abroad) use course material prepared by EU as textbooks in conventional university courses, because of its clarity, integrated structure and overall appealing design. Moreover, in several subjects it is the only university-level material available in Hebrew. None of the other universities has the organisational infrastructure and the suitable conditions for developing such study materials. In this respect, the independent DTU that develop and produce self-study courses, such as the British Open University and EU, contribute significantly to the improvement of university-level textbooks.

ENHANCING INDEPENDENT STUDY

In general, the intention of conventional university teaching is to enhance students' critical thinking and independent study habits (McMillan, 1987). In this respect DE students, because of their separation from a teacher, are close to the ideal of the independent or autonomous or self-directed learner (Jeavons, 1984). An Australian survey of the information needs of DE students (Winter & Cameron, 1983) found that students who studied from textbooks with the assistance of self-study guides made more use of almost every other source of library material or information as compared to students in conventional settings.

The fact that many self-study courses prepared by DTU are used as textbooks in conventional universities provides the students of these institutions with self-study tools and directions which might be utilised and transferred to learning from traditional textbooks and study materials.

Moreover, around 20 per cent of the 12,000 EU students are soldiers who take several courses (mainly introductory courses) during their three years of military service. Most of these students do not intend to complete their undergraduate degree at EU, but transfer their academic credits to other universities after completing their military service (mainly because they wish to major in specific disciplinary areas, which do not exist at EU). Many of these students indicate that studying at EU helped them significantly to tackle the academic requirements at conventional universities. The influence of DE methods in promoting independent study constitutes an interesting topic for further investigation.

IMPROVING THE PEDAGOGY OF UNIVERSITY TEACHING

Most of EU's courses are prepared by collaboration with academics from the conventional universities. From the very outset, EU intended to base its academic work upon a nucleus of internal faculty members working together with outside contributors. Its planners determined that it was impractical for the new institution to build the kinds of specialised faculties which characterise traditional universities. In 1987 EU has a full-time senior academic staff of 24 lecturers and professors. But several hundred scholars from other universities are utilised on short-term contracts to consult, write and rewrite various portions of courses. Obviously, writing distance learning texts requires skills which are often quite different from those associated with lecturing. Even brilliant scholars with an outstanding reputation in the academic world can fail to transmit their knowledge and expertise into an instructional written discourse. Some external authors are shocked and surprised when they are presented with challenges to their assumptions about teaching and are forced to rethink how they should present their subject.

By the intensive involvement of outside professors in writing self-study texts, EU provides substantial potential for improving instruction in the traditional universities. In a comprehensive study of EU's activities, Halperin concludes that EU contributed to Israeli higher education "by paying pre-eminent attention to effective pedagogy and by addressing the crucial question, "what is quality in higher learning?" As hundreds of professors from around the country have come to be involved in EU's work, the spin-offs for improved teaching elsewhere cannot be doubted" (Halperin, 1984:99).

In mixed institutions in which the same professors teach on-campus and off-campus students DE also contributes to improving the pedagogy of university teaching, in general. Jevons (1984) concludes that in the mixed institutions of Australia the tough discipline of preparing DE materials makes pedagogic problems more explicit and teachers more expert. Beaudoin (1987) of the University of Maryland predicts significant increase in distance learning within the framework of traditional universities in the USA, and as a result of this trend, a drastic change of the university professors' instructional roles.

PROMOTING INTER-DISCIPLINARY COURSES

Academic teamwork in DTU, such as the British OU and EU in Israel, enables the development of interdisciplinary courses, which are very difficult to plan and manage in a system based on courses which are taught single-handedly. Each course proposal in EU has to get the final approval of the Academic Committee, EU's higher academic authority. The Academic Committee is made up of EU's academic faculty members and representatives of the other Israeli universities. The fact that the Academic Committee is comprised of people from a broad spectrum of disciplines enables its members to perceive the development of a specific course in the context of the total system. This is especially beneficial when dealing with an interdisciplinary course. EU has developed several such courses combining aspects of history-literature-arts, philosophy-science, etc.

CONTRIBUTING TO INTER-UNIVERSITY COLLABORATION

Obviously, the intensive co-operative between EU's internal staff and outside scholars contributes significantly to inter-university collaboration. EU does not compete with the other universities, but provides a basis for mutual development. Academics tend to co-operate mainly in research projects, but rarely do they share ideas in preparing their teaching curricula. DTU may encourage growing collaboration between universities in various teaching projects.

ADVANCING THE INTEGRATION OF MULTI-MEDIA INTO THE LEARNING/TEACHING SYSTEMS OF THE UNIVERSITIES

Since the total structure of the DTU learning system is much more open than that of a traditional university, it is possible to generate a variety of models for multi-media course development, which might penetrate gradually into conventional campuses. Moreover, DTU can take advantage of technological innovations and incorporate them quite easily into the learning/teaching system. Rapid development in the field of microcomputers challenges the concept of traditional academic teaching based solely on face-to-face interaction. EU is currently in the process of developing a comprehensive School of Technology, based mainly on computer sciences. Nowadays, it is clear that we stand on the threshold of a microcomputerised world. In this sense, the learning systems of DTU might be the pioneers in the academic world.

PROMOTING RESEARCH ON ADULT LEARNING

Last, but not least, DE opens up new avenues for research into adult learning. Most of the DE students are older than the students attending conventional universities. The average EU student is over 30, working and married. EU's student population is heterogeneous in age (17 to 70 plus) and in previous level of education (eight years of education to doctoral degrees). Such diversity led to several research projects investigating various components of adult learning, textual presentations and the impact of support systems. Many other DTU carry out research into adult learning. This research might contribute significantly to a better understanding of variables affecting students' learning within the broader context of higher education.

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Electronic information exchange: the dream and the reality

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1985 ICDE CONFERENCE AND AFTERMATH

During the Thirteenth World Conference of the International Council for Distance Education (ICDE) in Melbourne in 1985, the authors convened a meeting of conference participants interested in electronic mail and in bibliographic databases. We are pleased to report that the meeting has seeded the establishment of two networks of educators.

The first network is AOLIN (the Australian Open Learning Information Network), a primarily Australian on-line network built on a national system called Keylink T. AOLIN has over 120 members from some 50 Australian and overseas organisations in the tertiary, government and adult education sectors, and is being actively exploited by technology researchers as an international forum for the exchange of views and news in a conferencing mode.

The second network is an informal bibliographic database working group, which seeks to promote the use of national, regional and international documentation centres for the exchange of information on distance education institutions and courses and on research literature. The network includes members from Asia, Australia, Europe, the Middle East, North America and South America, who communicate through whichever means are available to them, for example, through electronic mail, facsimile, telex, telephone, postal services and personal visits. A standard format for cataloguing distance education literature which was produced by the group has been incorporated into a custom-made database system designed and developed by the Open University Academic Computing Service Educational Software Group for the International Centre for Distance Learning, which is based on the Open University campus. The group has also discussed the subject indexing of distance education literature (Harry 1987).

INTERNATIONAL INITIATIVES

Since the 1985 Conference, several important international initiatives have been launched or announced. Each has implications for educators looking after information provision or dissemination and retrieval. The following are some of the most recent.

The European Association of Distance Teaching Universities was established in January 1987. In its introductory brochure, the Association includes amongst its objectives: "to support bilateral and multilateral contacts of the academic staff of the participating institutions", "to support cooperation in the field of research, course development, course transfer and credit transfer", "to develop new methods and techniques for higher distance education, including new technologies and media" and "to organize common projects in these fields in cooperation with European authorities". The Association is currently collecting data for a directory of member institutions which will subsequently be expanded into a directory of European higher distance education.

A second initiative is the proposal for the creation of a University of the Commonwealth for Cooperation in Distance Education (Commonwealth Secretariat 1987). The Commonwealth Heads of Government meeting in Vancouver in October 1987 approved the creation of an institution to promote multilateral or bilateral arrangements designed to further Commonwealth cooperation. The British Government indicated its willingness to provide support through funding the expansion of the International Centre for Distance Learning to cater for the distance education information needs of Commonwealth member nations.

A third initiative concerns the recommendations of the Consultation on Higher Distance Education organised by Unesco in Geelong, Australia, in September 1987. The draft "plan of action" drawn up at the Consultation includes the following as one of five immediate objectives: "Databases of current information and of information on the literature of higher level distance learning should be developed and made available to users worldwide. Bodies such as the International Centre for Distance Learning of the United Nations University and the International Council for Distance Education could be possible partners in this initiative." Most of the additional four immediate and five longer term objectives concern the more effective use of technology and networking for collection and dissemination of information on distance education in developing and developed countries.

Central to the development of these services is the use of computer communication. The establishment of major networks such as the European Association of Distance Teaching Universities and the equally recently-formed Asian Association of Open Universities, alongside longer-established organisations such as the Canadian Association for Distance Education, many of whose members are already linked electronically, makes it particularly important that an international organisation should take on or sponsor a coordinating function to enable distance educators to communicate electronically as widely and as easily as possible. We suggest that the International Council for Distance Education should be that organisation.

AN IDEAL ELECTRONIC NETWORK

What exactly might an international electronic network provide? In the best of all possible worlds, an extensive electronic network of individual users in distance teaching institutions will be able to communicate readily and inexpensively throughout developing and developed countries.

The network will have bulletin board and computer conference facilities as well as access to specialised databases containing, for example, bibliographical information on distance education literature and data on distance courses available in different institutions. Bulletin boards will carry for example, details of forthcoming conferences, newly published titles, staff exchanges, and projects in progress. Computer conferences devoted to specific aspects of distance education will operate in different languages depending on the host and the participants.

Ideally, each country will have a national node which is linked to the other nodes in the same region, with the regional node linked to the international coordinator's top node. It is also desirable for any node to be able to bypass intervening nodes to go to one another directly.

The obvious non-technical obstacle to the development of worldwide networks is the difficulty of developing countries gaining access to the relevant technologies and obtaining the necessary resources to fund, maintain and use them. Developing countries should be involved wherever possible and priority service should be given to them through the established means of communication by information providers.

WHAT IS ALREADY POSSIBLE: ONE TO ONE COMMUNICATION

We think it helpful to report in some detail the activities of a dozen or so ICDE members since 1985 in the establishment of informal electronic networking. They have been communicating on a one to one basis. This is done in two ways:

1 By registering on similar systems which have interconnect facilities.

The systems can be commercial electronic messaging systems. For example, some ICDE members are registered on the Dialcom systems (e.g. Britain's Telecom Gold, Australia's Keylink D) and Telemail systems (e.g. America's Telemail and Mail and Australia's Keylink T). The system forwards the mail for them without any hassle or effort on their part. Delivery reliability is excellent but the cost is rather high.

A cheaper alternative is by using existing regional or national computer networks accessible from institutions. For example, members of the Open University can use JANET to send mail to colleagues at Deakin University, which is on ACSNET, and to North American educators on BITNET. The operation mode is quite simple: an Open University staff member composes a message on a microcomputer or a terminal, then uploads it to the Open University VAX machine which is connected to JANET. The machine will send the message automatically to JANET without the user being aware of how it is done. JANET will then route the message through several other networks which will then, in a relay fashion, deliver the message to its destination. These cooperative networks are in turn linked to thousands of other networks around the world, e.g., ARPA Internet, CSnet, NETNORTH (North America), JUNET (Japan), SPEARNET (New Zealand), and Eunet (Europe). Reliability of delivery and addressing format, however, can be occasionally problematic. In addition, such networks are dominated by computer professionals and can therefore be somewhat daunting. Most educators are not aware of the existence and availability of this resource in their own institutions (Castro 1987 a, b).

2 By reciprocal registration on each other's computer system.

The Open University has been given an account on the Deakin University central computer and vice-versa, thus it is possible to dial to Deakin's mainframe to use all the facilities there (including consulting the Library catalogue), apart from mail.

Some Deakin members can do the same when they sign on to the Open University computer (Castro & Stirzaker, 1986).

This type of access depends on the good will of institutions, is very expensive, and demands some technical expertise since communicating via international packet-switched networks and then using a strange host system is not easy.

WHAT IS ALREADY POSSIBLE: ONE TO MANY COMMUNICATION

Another method which allows greater group interaction is for a number of people to agree to register on a single system which has computer conferencing and bulletin board facilities.

For example, a growing number of users are on the CoSy system at the University of Guelph in Canada, and on AOLIN in Australia. Such communication systems require the users to actually sign on to the machine, so overseas telecommunications costs are a big problem, but the systems are very easy to learn and use.

CoSy has more sophisticated conferencing facilities, and AOLIN, being a fully managed network, has many more centrally offered facilities like electronic publishing, a bibliographical database and a detailed international members directory.

CURRENT PROBLEMS

The above examples together provide a very simple overview of the various types of networks which distance educators are using. But such information exchange is not without its share of problems.

Our dissatisfactions with current developments and operations of such networks are:

1. Systems often exist in isolation with little or no interconnection arrangement in the hands of responsible management teams.
2. There is very little cooperation between the commercial systems offered by public telecommunications authorities and computer networks operated by university-based people.
3. There is no international co-ordination of networking efforts or usage. What is being done relies on the piecemeal efforts of a few pioneering individuals; and we have no idea who is on which system.
4. There is little institution-initiated user training and education; most people learn the basics by courageously knocking on the doors of a few sympathetic communications experts in their institutions.
5. None of the proprietary systems or networks have included powerful database management programs which could be used to design and install large information or bibliographical databases of an international nature, which are, in our view, powerful tools for distance education research.
6. Telecommunications costs for systems like Dialcom, Telemail, CoSy and AOLIN, for example, are invariably too high for naive users who have not acquired the necessary skill to use them efficiently.
7. Telecommunications costs are seldom listed as a legitimate item in institutional budgets. As a result, researchers who are given grace-and-favour usage of some systems have not been able to exploit the medium more effectively for fear of having that usage removed if the account becomes too high.

These problems, however, are not generally appreciated except by researchers anxious to promote and exploit the potential of computer communication. In our view, they can be overcome in time and with concerted effort by dedicated researchers ready to lobby their respective institutions, and computer networks and telecommunications authorities in their own country.

CONCLUSION

An international electronic network for educators can be built using either or both of the above access methods provided that some interconnecting and management functionalities are put in place and maintained efficiently. By this, we mean people as well as network protocols. There are more and more communications specialists appearing on the scene to help with network protocols, interconnection, and making the systems more user friendly. But we also need to start to identify users and to design contents. Can we identify the potential members of such a network? Who will be willing and able to take on a regional management task, if that is needed in the design of such a network? Who are the people who can provide the basic or standard contents on such a network? These are some of the questions which we feel can be effectively addressed if ICDE takes on an international coordinating role in relation to electronic information exchange between distance educators.

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Distance education for Minnesota prison inmates

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INTRODUCTION

After a brief overview of the Minnesota Department of Corrections and the University of Minnesota Department of Independent Study, this paper describes the two principal distance education programs at the college level for prison inmates in the state of Minnesota. These are called "Insight" and the "Higher Education Consortium". The paper then describes suggested improvements in courses and programs to serve the inmate population better.

This paper defines distance education as all education offered in an off-campus setting. Since inmates are unable to attend classes on campus, all their courses are delivered by distance education. The methods of delivery include correspondence, television and radio courses, and courses held on-site where college faculty members are allowed to enter the prisons to conduct classes.

OVERVIEW OF THE MINNESOTA DEPARTMENT OF CORRECTIONS

The Minnesota Department of Corrections houses 2,400 inmates in nine correctional facilities, three juvenile and six adult, one of which is for women. Minnesota's incarceration rate per capita is the second lowest in the United States, and each institution provides a program-rich environment for its residents, including well-funded and strongly supported educational options. Those educational opportunities range from individualised literacy training to full-time college programs, depending on the type of institution and the needs of the inmates it services.

UNIVERSITY OF MINNESOTA DEPARTMENT OF INDEPENDENT STUDY

The Department of Independent Study at the University of Minnesota is recognised for its excellence in distance education. Offering 498 courses by correspondence, television and radio, it is the second largest degree credit independent study program in the United States. The Department registered 8,418 students in 1986–87. Of those registrations, 195 were from inmates.

INSIGHT

Two of Minnesota's prisons are homes to a unique and successful experimental program called Insight. One of these prisons, Stillwater, is a turn of the century maximum security facility where half of Minnesota's inmates reside. The other, Lino Lakes, is a medium security institution with 260 inmates. According to a promotional brochure circulated to inmates, Insight is "a non-profit corporation founded and administered by inmates for the purpose of providing post-secondary educational opportunities to inmates". It was founded in 1975 by two inmates then at Stillwater: J.P. Morgan, who continues as the president and chief executive officer, though his office is now in the medium-security Lino Lakes institution where he was transferred after more than a decade of "good behavior" and Jimmie Johnson, now released. These two founders, after intense lobbying, convinced the Minnesota prison administration to approve their idea. Insight is run like a business and has an 18-member volunteer Board of Directors consisting of professionals from the prison staff and from the outside community.

Although Insight was initially funded by grants from Minnesota-based corporations, with Control Data Corporation as the largest contributor to respond to grant requests written by the inmate founders, J.P. Morgan realised that if Insight were to become a long-term business, it would have to be self-supporting. Two years ago, after developing businesses within the prisons to provide telemarketing and computer programming services to companies outside the prison, it became self-supporting, and in 1987 it has a projected income of $300,000.

The 56 inmates (44 at Stillwater and 12 — soon 16 — at Lino Lakes) in the program are required to do two things. First, they must work full-time in prison industries. The 20 most fortunate meet this requirement by working in the Insight businesses. Those 20 include J.P. Morgan, Brad Vogelpohl, who supervises the Stillwater part of the program, 2 academic advisors, 12 telemarketers, and 4 computer programers. Whereas workers in other prison industries earn $1 per hour, those in Insight earn a minimum wage of $3.50 per hour. The income generated by Insight businesses goes, in part, to pay its staff. The balance of the income pays for tuition and books for program expansion. According to Morgan, "the businesses exist for the benefit of the academic program" and Insight businesses generate the $3,500 per year required to keep a student in school. Insight does not cost the taxpayer anything and, in fact, Insight workers pay taxes on their earnings.

The second requirement of Insight members is that they take full credit loads each quarter from the University of Minnesota or Metro State University, maintaining a C average or better for all course work. Two courses per quarter (eight per year) are offered on site, and the remaining 60 per cent are Independent Study courses. The completion rate is over 95 per cent with a B+ average. In 1986–87 50 Insight students enrolled in 184 Independent Study courses from the University of Minnesota. Of those enrolled 92 are still in progress, but of the 92 completions, inmates earned 39 As, 37 Bs, 15 Cs and 1 D. Al Christianson, academic advisor at Stillwater, explains the high completion rate and grade point average: "They either make the grade or they're out of the program".

Insight is a successful academic program. Thirty-eight inmates have received baccalaureate degrees and one a masters degree. The recidivision rate for students who have been in the program a year or more is less than 10 per cent compared with 35–70 per cent, depending on interpretation of statistics, for non-Insight inmates. They succeed when they are released, according to University of Minnesota Professor Daniel Detzner, a member of the Board of Directors, because "they have a degree, they have money in the bank, and they have job training experience".

Inmates want to be in this demanding program. There is a waiting list of from 2 to 20 at any given time, and the "game players" who want to get into an easy program says Detzner, "either don't make the grade or they are transformed". Of those accepted into the program, 20 per cent don't make it. The 80 per cent who do make it do so in part because they learn to set and achieve goals, a skill that many of them had never been challenged to develop before. They live in a supportive and learning environment. A cell block, set aside exclusively for Insight, is furnished with a library, typewriters, counseling services and other types of academic support. Morgan notes that the prisons are "jammed with negative thinkers", but Insight gives its members a chance to turn a negative experience into a positive one, and results show a positive impact on its members and on society as well.

HIGHER EDUCATION CONSORTIUM

Three of the prisons in Minnesota receive educational services from the Higher Education Consortium, comprised of six Minneapolis/St. Paul colleges, universities and vocational schools, which is administratively based in Continuing Education and Extension at the University of Minnesota. These schools provide courses in a format for the general population inmates, who are not eligible for the Insight program. By combining resources, the schools are capable of increased program diversity, since one is a private four-year college, two are two-year community colleges, one is an upper division, competency-based school, and one is a vocational training school.

At Oak Park Heights, a new state-of-the-art maximum security facility, the Consortium delivers the entire education program, using existing staff and faculty to provide four different credit courses a quarter from the participating colleges, in addition to a computer analyst course, a computer-assisted drafting class, credit art instruction, and a Skills Center to develop the basic reading, writing, math, and how-to-study skills of the students.

At Stillwater, the Consortium offers a supporting Skills Center and three on-site classes per quarter in the evening to minimize competition from institutional industry jobs and to maximize participation by those who are most interested.

Lino Lakes receives on-site courses, correspondence courses and a Skills Center from the Consortium. Because it serves the two maximum security institutions from which the Lino Lakes inmates are selected, the Consortium is able to provide continuity and transition for the inmates as they progress through the system. The transition continues as the inmates are released, with the program coordinator making admission and financial aid arrangements at the Consortium school of the student's choice. Because each of the schools accepts the credits offered in the institutions by the other schools, as established in the original plan, the student can choose a school on the basis of considerations such as program strengths and location.

FUTURE DEVELOPMENTS

Insight plans to introduce a halfway house for students who are released from prison before their degrees are completed. It will not be a residential house, but students will work there for a year or two in this new branch of the telemarketing business to earn income for ongoing payment of tuition and books so they can complete their degrees.

The Consortium is considering plans to create an interactive television link connecting Oak Park Heights and possibly Stillwater with the vocational school and one of the community colleges. A similar link currently connects the new women's prison at Shakopee with a vocational/technical center and the local high school. This system greatly expands the classes available to the inmates and allows them to be active participants in courses taught at a distance.

DEVELOPMENTS IN THE DEPARTMENT OF INDEPENDENT STUDY

We are working on two plans for course development in Independent Study programs. One is to adapt courses that are already available in the Independent Study program for use in the prisons. Adaptions we are considering include putting the video component of broadcast television-assisted courses on cassette for delivery on the prison closed-circuit television stations and augmenting correspondence courses with several on-site visits by the instructors. Our second plan is to design new courses to use equipment already available in the institutions. Such a project is currently under discussion at the University of Minnesota. It involves developing a composition course with a word-processing component. This course will be available to all students with access to word processors but designed particularly for use in the prisons, where such equipment is available. It will be tested at the Shakopee prison and augmented with on-site visits by its author, Professor Lisa Albrecht, a veteran instructor of composition courses at that institution. Currently only one course is offered there per quarter, since few Shakopee inmates have college-level skills, backgrounds and interests. The writing course will expand the institution's offerings and give Independent Study an opportunity to test the new course design.

Although George Hatcher, Academic Advisor at Lino Lakes, calls Independent Study "the best thing we have going for us", he has suggestions for ways Independent Study can serve them better. He wants faculty to provide quick and thorough written feedback on assignments and suggests that faculty members hold telephone office hours for students. Brad Vogelpohl underscores the importance that telephone contact would have but suggests setting up a central clearing house, perhaps at an Independent Study administrator's desk, where inmates could leave messages requesting instructors to return their calls. This system would eliminate the fear some instructors have of giving their phone numbers to inmates. We suggest that faculty members be polled for their willingness to participate, and that Insight and Consortium leaders be given a list of faculty members willing to participate.

Quick feedback on assignments is important to motivate students to continue but also because the academic advisors in Insight set up a schedule for their students to complete one lesson per week. These schedules cannot be met if instructors delay in returning lessons. Faculty members are being trained to understand the importance of the timely return of lessons and to understand the special needs of this particular audience. Hatcher also urges Independent Study to develop basic courses required in most degree programs (such as composition and mathematics) and courses to meet distribution requirements so there can be more variety among the eight on-site courses offered each year.

A final suggestion, this time for the benefit of the Independent Study program, is that we listen to our inmate audience. They can provide a "consumer index" to our program, indicating which courses are out of date, which are exciting or dull, which faculty members are responsive, and which are not.

CONCLUSION

The success of the programs described in this paper encourage us to continue to refine and develop educational services to inmates and to glean from those services advantages for the general distance education audience.

Is distance education a mode of education in its own right or is it a substitute for conventional education?

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The question asked in the title is fairly seldom explicitly answered. As a matter of fact many distance educators do not seem to ask themselves the question at all or else find it irrelevant. However, there is a fundamental difference between the alternate approaches indicated by the question. As this difference has bearings on methodology and procedures it will be looked into here.

IMPLICIT REPLIES

Whereas the view of distance education as a separate entity as opposed to regarding it as an instrument for replacing conventional education is rarely either propagated or argued against, there is implicit evidence galore about entrenched positions representing these two views.

A comparison of the following two quotations will illuminate these. Both are concerned with the evaluation of distance-education projects.

The first runs like this:

Three groups were established: a traditional control group which met three times per week with an instructor using lecture and discussion procedures, an exempt-control group consisting of students whose frist semester Freshman composition requirement was postponed (this group concentrated on study of literature) and an experimental group consisting of students who met with an instructor once a week and fulfilled requirements of the course primarily through correspondence study. The experiment continued through the years 1963–64, 1964–65, 1965–66 and 1966–67. Forty students were involved in the experimental group the first year, 80 the second, and 160 each of the last two years. Numbers in the control groups were comparable. Tests were given to all students at the beginning and end of each semester and papers from all groups were evaluated and compared.

(Childs, 1971, p. 240, on a study by Willingham)

The view of distance education implicit in this research design should be compared with the following quotation, which reports on a study based on research initiated by Torstein Rekkedal in Norway (Rekkedal 1983). The latter had found a distinct correlation between assignment turn-round time and course completion. This caused an international study, for which data were collected from five distance-teaching organisations.

During the course of Rekkedal's study, turn-around time was manipulated experimentally so that one group of students, classified as the "Quick Group" had a median turn-around time of 5.6 days, while the other group (the "Delayed Group") experienced a turn-around, which had as its median 8.3 days. The overall range of turn-around times in the experiment was between 2 days and "10 days or more"...

In the present study, the notion of integration of students was investigated in light of the number and timing of required contacts between the faculty and students. These required contacts were investigated in terms of the number of assignments submitted, the turn-around time on these assignments, and the "feedback interval" between assignments, which was defined as the elapsed time (in days) between the receipt of feedback on consecutive assignments. Such required contacts were therefore examined in terms of the pace of interaction (turn-around time) and the density of feedback (feedback interval).

(Barker, Taylor, White et al. 1986, pp. 18 and 19)

The very research design described in the first quotation makes it clear that "correspondence study" as investigated is seen as fully replaceable by learning supported face-to-face. In fact, distance education is here merely a distribution vehicle for subject matter to be learnt.

The study referred to is only one of many comparing the effectiveness of distance-education methods and those of face-to-face methods. They were particularly common at a time when distance education (correspondence education, home study) fought for recognition as a useful approach to teaching and learning. The usual design of such studies was an arrangement with two comparable groups of students made to learn the same subject matter, one by working through a correspondence course, the other by taking part in ordinary classroom teaching; the achievements of the two groups were then compared. Peters refers to research of this kind as relatively advanced statistical work combined with a complete lack of theory ("ein relativ fortgeschrittenes statistisches Treatment bei völliger Theorielosigkeit") (Peters 1973, p. 17). The lacking theoretical orientation meant is one concerned with the special character of distance education.

We shall return to "theory" in this context, but let us first consider the second quotation above. Here distance education is investigated independently of settings parallel to those of face-to-face education. Students' possibilities or willingness to take part in classes is irrelevant for the study; learning can be entirely individual and there are no classes to be considered nor physical presence in any other form.

APPLICATIONS OF THE TWO APPROACHES

The view of distance education as a substitute for conventional educations as represented by the first quotation discussed is by no means of rare occurrence. It represents what I have elsewhere (Holmberg 1985 p. 9) called a small-scale application. A small-scale application occurs in the cases when, for technical reasons (because of travel requirements, difficulties in arranging classes on days or at hours that suit potential students, lack of teachers etc.) courses are offered at a distance as a substitute. While there can be no objection to this use of distance-education procedures, they utilise a small part of the potential of distance education. This can be said about some well-known and highly successful set-ups, for which the Australian New-England system (Smith 1979) can be regarded as a prototype. The Canadian University-of-Waterloo teaching is interesting in this context:

> "... we have fixed starting times for a course, a fixed schedule of assignments, a fixed duration of a course, and a fixed examination schedule. Our approach is to treat students as members of a class, although that class is distributed geographically. Thus our students start a course together at the same time and have to submit assignments and write examinations on a schedule in exactly the same way as a class on campus is required to do."
>
> (Leslie 1979, p. 36)

In fact, the insistence on classes and pacing seems to represent a typical characteristic of the view of distance education that sees it as a substitute for education face to face. Conventional views of educational planning and organisation induce spokesmen of this school of thought to impose the same restrictions on distance study as is usually unavoidable in traditional study: limited geographical coverage, classes of limited size, pacing, division of the year into terms of study, regular meetings, prescribed examination dates, vacations etc. To the extent that in systems adopting these limitations the type of distance education applied is felt to be innovative, it is what Ross 1976 calls innovation within the accepted paradigm. Cf. Holmberg 1985 Chapter 8. Several large-scale systems also apply some restrictive practices of this kind, thus for example the British Open University and the German FernUniversität.

Once distance education is applied outside the organisational and administrative framework of conventional schools and universities its potential for extraparadigmatic innovation becomes evident. Its claims to be a mode of education in its own right is based on this potential.

The innovatory character of distance education emanates from

- the underlying ideas that learning can occur without the presence of a teacher and that the support given to students can be adapted to individual knowledge levels;
- the consistent use of non-contiguous media both for the presentation of learning matter and for the ensuing communication;
- real, mediated dialogue and simulated didactic conversation, appropriate use of media available, adaptation to students' conditions of life, etc.;
- the methods used to exploit the non-contiguous teaching/learning situation so as to attain the highest possible effectiveness for the individual learner: structure and style of presentation and communication
- the particular organisation which makes it possible to provide for both independent individual learning and mass education through personal tutoring and more or less "industralised" working methods;
- the possible liberation from organisational and administrative restrictions usually inevitable in face-to-face education, geographical limitations, schools or university terms, keeping prescribed pace etc.
- the possibilities if offers for economies of scale
- the influence distance education exerts on adult education, further training and labour-market conditions, by opening new study opportunities as well as through its methods and organisation.

A POSSIBLE BASIC CHARACTER OF DISTANCE EDUCATION

Distance education as a separate mode of education has, de facto, a mass-communication character in the large-scale systems. Individual courses are developed for thousands of students. Thus in a staff-development course for teachers 50 000 copies of the learning material were produced (Holmberg 1973). This mass-communication aspect is something of a paradox as, unlike the small-scale systems referred to above, large-scale distance teaching addresses the individual rather than a group or class. Individualisation occurs in the two-way communication process, i.e. in the non-contiguous interaction between students and their supporting organisation, its tutors and counsellors. It is in this context that the industrial approach is important. Otto Peters, the originator of the view of distance education as an industrial type of teaching and learning, stresses rationalisation and division of labour in the interest of quality and economics. This view is widely accepted. Cf. this Canadian statement:

> The extra effort required in the development of distance education courses pays off when the same materials can be used to teach any number of students at any number of different institutions. The creator of the course need not be involved in delivery, and the tutor who deals with students "ceases to be the master of the content and must become the guide, mentor and catalyst to aid the student's journey through a pre-structured or open-ended learning experience". (Forsythe 1983:163) Communicating with distant students requires special skills for which training may be provided. (Williams 1980; Cochran and Meech 1982; Sturrock 1983; Kaufman 1984a) This is an area that would benefit from further attention by researchers.
>
> (Calvert 1986, p. 102)

Industrialisation in this sense implies using first-class specialist authors, editors, media specialists, designers etc. for the development of courses to be produced in large editions, other specialists for counselling, tutoring, assessing, administrating the work etc. High quality is attained by the division of the work among specialists for each individual task.*

This approach is fully or partly applied by the large distance-education organisations, whereas small-scale distance education in many cases favours procedures more in line with traditional face-to-face education. Both usually aim at individualising their tuition. Cf. Thorpe 1979 who says about one large-scale organisation, the British Open University, that "the course teams provide the reading material (texts, broadcasts, kits) for hundreds or thousands of students *in general* and the course tutors and tutor-counsellors teach the students as *individuals*" (p. 1). It is evident that the industrial approach in this sense does not preclude individualisation or personal communication.

There can be little doubt about the validity of the above brief characterisation of distance education as a mode of education in its own right. The paradoxical combination of elements of individualisation and industrialisation, dialogue and mass communication are inevitably immanent in distance education. However, they are present to different degrees in individual distance-education systems. While contrasting large-scale and small-scale systems illuminates the extreme poles of an existing continuum, a number of intermediary positions are possible and *de facto* occur.

It would be unrealistic to try to ascribe to either of the categories large-scale and small-scale distance education all the kinds of distance education which occur in universities, schools and companies as individual programmes. We have to count with an infinite number of applications which make use of traits typical of both. Deakin university in Australia may be a case in point (Castro & Holt 1985). An interesting application is the training (staff development) of university lecturers as a distance that the University of Surrey runs in South East Asia. While the study is here independent of time and place and is based on pre-produced courses, which makes it similar to the large-scale approach discussed, the number of course participants is small (an intake 1981–1985 of between 17 and 50 students) and individualisation aiming at personal relevance to each student is brought about by references to students' experiences in the submission assignments. Students are asked "to relate the general to their particular experience" (Elton et al. 1986 p. 30).

CONCLUSION

There is no possibility to refer to distance education exclusively either as a mode of education in its own right or as merely a substitute for conventional education. In reality both types occur and are successful as can be shown by the simple reference to, on the one hand, the British Open University, other large-scale distance-teaching universities and correspondence schools, on the other hand the small-scale approach of, for instance, the Australian University of New England.

Nevertheless we seem to be entitled to claim that distance education of the type that uses its full potential can only to a limited extent be described, understood and explained in terms of conventional education and must thus be regarded as a separate mode of education. This is, in fact, one of the main conclusions of Otto Peters' by now classical analysis of the "industrial" character of distance teaching as compared with traditional teaching (Peters 1973 pp. 309–310). Peters ignores the small-scale type of distance education.

Not only typical large-scale and small-scale types occur, however; so do a number of applications partly resembling either or both of these. Diversity rather than uniformity characterises distance education. Nevertheless the paradox that distance education includes elements of both mass communication and individualisation, of industrialisation and dialogue remains a basic characteristic.

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* There are strong arguments in favour of consistent coordination of these tasks, thus, e.g., in order to facilitate simulated dialogue to make one author (course-team leader) address the students in a personal way. Cf. Holmberg 1983.

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Independent learning: What the students say

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INTRODUCTION

From 1983 to 1986 I carried out an investigation of the development of learning autonomy by tertiary distance students. The primary task of my research was the hermeneutic explication and mediation of divergent forms of thinking about external students, current states and factors contributing to their growth in learning autonomy. The vehicle for this understanding was at first the basic language of the participants and ultimately their metalanguages through interviews. The process of researcher affinity with this language was essential to the interpretation. The interpreted evidence was submitted to further enquiry for explanation by survey of all of the distance students in Far North Queensland. The data from the survey was submitted to Discriminant Analysis for a prediction of factors most likely to produce student growth in the affective domain and consequent independence in learning. Therefore, both cultural and empirical sciences were called on to aid the explication of evidence.

PHASES IN THE HERMENEUTIC EXPLICATION OF EVIDENCE

In summary the phases in this explication appeared as:

1. Establishing the language of independent learning of the participants (through Key Informants).
2. Immersion of the researcher in this language.
3. Establishing the metalanguage of independent learning of the participants (by Sampling of Opinion).
4. Immersion of the researcher in this metalanguage.
5. Reflection on the evidence (Second set of Key Informants).
6. Interpretation of the Issues through the examination of perceptions provided by the Key Informants.
7. Design of a Survey based on this interpretation.
8. Presentation of the Survey to a wider audience to seek confirmation of the evidence.
9. Seeking direction for analysis of the Survey (Sampling of Opinion).
10. Analysis of Data and production of Guidelines for developing distance learning autonomy.

This paper deals with Phases 1 to 6 and concentrates on the method and the evidence procured.

HERMENEUTICS

Hermeneutics is interpretation through reflection. The philosophy of reflection relies on a model that underlies the methodological connection of experience, expression and understanding. The goal in hermeneutical reflection is to reconstruct the experience through valid symbols in which the participants are embedded. The objective structure of these symbols can be understood when we revert to the process in which the meaning of the symbols was generated. Understanding is consequently anchored on prior understanding.

There is a circular character about this understanding and interpretation:

"Any interpretation which is to contribute understanding must already have understood what is to be interpreted." (Heidegger, 1962:194).

At the outset I knew that I was seeking to understand what conditions would promote affective and autonomous development of external students. The circle was to close with an understanding and explanation of these factors as well as the many issues related to their promotion.

HERMENEUTIC INTERPRETATION

Whereas positive science is predicated by a resolve to achieve a pre-suppositional or spontaneous beginning what it asserts is independent of any reliance other than what it declares at the outset, the circle of understanding and interpretation in hermeneutics seeks to clarify through reflection what is already, but incompletely, understood. Habermas (1980:186–188) has shown how the hermeneutical circle is useful to social enquiry as:

(i) critical theoretical value showing how positivism neglects the subjective nature of the knowing subject; and

(ii) methodological value generating new methods of enquiry in the human sciences such as critical theory.

It must be remembered that the crucial goal of critical theory is human emancipation and distance students are recognised as disadvantaged and deserving of educational emancipation.

Hermeneutics is a discipline that has been primarily concerned with the elucidation of rules for the interpretation of texts. More and more it is being utilized as a tool for interpreting oral language such as is manifested in interviews. John Thompson in his *Critical Hermeneutics,* a critique of the work of Habermas and Ricoeur, points out that "it is by language that the world as an historical phenomenon is conveyed". (1981:41) But language is developed by individuals out of a cultural and social tradition. What one is attempting to understand or interpret is not an historical amalgam of facts but a "meaningful content immersed in a tradition of its own" (ibid). This 'historicity of being' is a central theme in the work of Gadamer (1975, quoted in Thompson). The assertion is that human beings are locked into the flow of history and may aspire to rational self-determination but cannot break with tradition which defines the reality and the finitude of their being (ibid:40). Interpretation of language therefore cannot ignore the historical realities and tradition-bound nature of the dialogue of the interviews. It becomes imperative that the interpreter becomes equally absorbed in the culture of the participants to reach any semblance of real understanding.

Paul Ricoeur, whose hermeneutic phenomenology has influenced much of the direction that this investigation has taken, concurs with these themes and argues that to overcome the interpreter's prejudices one must submit the subjects' affective and volitional processes of will to an independent phenomenological analysis. Such an approach must initially be structural but ultimately depends on reflection.

Ricoeur's theory of interpretation seeks to integrate explanation and understanding in a constructive dialectic which is rooted in the properties of the text (in my study it is the language of the interview which is opened to reflection). He attempts to establish a complementarity between explanation and understanding by making the text into the central problematic of hermeneutics rather than the intentions of its author (interviewee). What is guiding a Ricoeurian analysis is the discourse itself. In my analysis I have attempted, I believe successfully, to speed up the process of interpreter familiarization with the culture of the participants by the use of "Key Informants" and "Sampling of Opinion". The latter also add to the validity of the interpretations of interview evidence and language.

THE KEY-INFORMANT FACTOR IN INTERPRETATION

Key informants were used twice in this investigation. Key Informants are a feature of ethnographic research which relies for its basic data on the testimony of individual informants. In anthropological accounts of ethnographic work, the informant and the informant's role is seen as a central part of ethnographic research.

I was fortunate in making contact with key informants from the outset and at an appropriate stage in the refining of evidence. The initial field study was centred on interviews with officers tutors, and students in regional study centres throughout Queensland. These informants taught me about their circumstances. They gave me assistance with "knowledge on different social contexts, in providing explanation of situations that have been observed, and in giving the researcher some sense of the historical events...". (Burgess, 1985:80) Later, after forty interviews in Cairns I was able to employ a team of key informants to assist me with the interpretation of their evidence.

SELECTION OF KEY INFORMANTS

The initial field study was intended to be a focussing phase. The three informant types — officers-in-charge of centres, tutors and students were perceived to be representative of audiences in Queensland tertiary distance study. Small groups of informants were identified by the local officer-in-charge and met with me in informal conversations at a local venue after arrangements were made and purposes of my visit were explained in correspondence. All informants attended the informal interviews on a voluntary basis.

Five key informants who supported the investigation after the forty Cairns interviews were identified by me as being reasonably representative of the districs' external students with a range of qualifications, years of study experience, courses being studied or completed and/or tutoring responsibilities in the mode were invited to meet with me informally to reflect on the evidence I had gathered at that stage.

THE ROLE OF THE KEY INFORMANTS

In the initial phase of the study the key informants were able to present perspectives from their regional and personal status positions. Coming from widely scattered areas of Queensland, they presented some similar concerns about their study experiences and some unique to their location based on aspects of distance, environments and support. Representing students, tutors and officers-in-charge, they also brought to the discussions varied perspectives of how the institutions could aid their development.

The perspectives from the initial phase key informants became the pivotal issues in the exploration of affective and autonomous growth of external tertiary students. However, at no time was this evidence given the status of parameters on further discussion. The information gathering technique that followed allowed for new elements to appear at any stage. Nevertheless, these initial informants influenced my thinking about the topics for further discussion and survey.

The second phase of key informants played a more extensive role in the investigation. They acted for me, as they did for Burgess (ibid:91), as "guides, assistants, interpreters, providers of historical narrative and contributed to my preliminary data analysis". They were given access to all of my taped evidence from the forty Cairns guided interviews and corporately reflected on the information.

THE SAMPLING-OF-OPINION FACTOR IN INTERPRETATION

On two occasions I sampled opinion from larger groups than the key informant groups. The forty Cairns interviews were a mostly urban sample of an estimated 500 university and college of advanced education external students in Far North Queensland. A further 50 students representing all the external tertiary students resident in Weipa assisted with the direction that the analysis of the survey of all students took.

THE PROCESS OF INTERVIEW ANALYSIS

Since the object domain of Ricoeurian hermeneutics is the discourse, the first activity of the dialectic of interpretation is the imagination of the meaning of what is said and the separation of this from the intentions of the speaker. This stage represents possibilities for several interpretations for

"it is always possible to argue for or against an interpretation, to confront interpretations, to arbitrate between them and to seek agreement..." - (Ricoeur: 1976:79)

The elimination of inferior interpretations is not an empirical matter of verification and proof, but a rational process of argumentation and debate. Such was the style of the sessions I conducted with the key informants. The tone of such sessions was one of cordial but critical debate.

The second stage in the dialectic of interpretation is to sever the discourse from the interlocutor and the situation of the dialogue. This renders possible either the suspension of the interpreter's opinions and/or the actualizing of the non-ostensive references in this discourse. In this investigation the second stage of the dialectic occurred when the second team of key informants played out their role of guiders and interpreters.

The final stage culminates in understanding rendered by explanatory procedures of structuralist analysis. The object of the understanding is identified as a potential reference released by the explanation. Suspension of all professed significance apparent in the discourse creates the opportunity for a second order of reference to arise — a disclosing of a possible world. The possible world identified in my research is a series of heuristics for the enhancing of personal learning autonomy.

VALIDITY AND TRUTH

Validity and truth are approached from two directions in the dialectic of interpretation:

(i) An attempt is made to construe the meaning of the text as an individual and articulated whole. Ricoeur maintains that the method for validation of competing accounts is through the logic of subjective probability rather than empirical verification. So,

> "an interpretation must not only be probable, but more probable than another. There are criteria of relative superiority which may easily be derived from the logic of subjective probability." (Ricoeur in Thompson, 1981)

In adopting Ricoeur's approach, I have employed Key Informants (practitioners) to submit the discourse to argumentation.

(ii) As with the final stage of the dialectic of interpretation, the second aspect of analysis of the problem of validity and truth focuses on the method of interpretation. The truth attainable by the discipline is bound to the methods of interpretation which it employs. The implications cannot be abstracted from the methodological assumptions.

This aspect of dialectic action does not purport to be neutral and descriptive, but is openly ethical and prescriptive or in Thompson's words it

"does not limit itself to an analysis of the motivated action of an isolated individual, but attempts to comprehend the relations between motivated and rational action, between practical and theoretical reason, between individual and collective will." (op cit:62)

Like Ricoeur, I have conducted my investigations with an undisguised commitment to democratic processes within a context of rational belief in the fallibility of human responses. Truth is inseparable from being, so my interpretation of the discourses can be regarded as a reference to the reality perceived jointly by myself and the participants as being a part of our world.

LEVELS OF ANALYSIS

Ricoeur distinguishes several levels at which such an investigation must be conducted:

(i) At a conceptual level — describes everyday reason and motive.
(ii) At a propositional level — declares purposes and intents.
(iii) At a discursive level — the relations between statements concerning action are specified.

THE EVIDENCE

What follows is a compilation of the interview data from Stage 1, the Initial Field Study which established the language of independent learning at a distance by these Queensland students; followed by an establishment of their metalanguage, or language that was used to discuss in less than objective terms what the students meant objectively, by sampling the opinions of forty Cairns-based distance students. This information, together with tapes of the interviews was made available to a consultative team who acted as the second set of key informants providing a critical response to the information so far. The outcome of the latter exercise was the creation of a survey document based on the discursive validity of the collective issues raised so far.

THE LANGUAGE OF INDEPENDENT LEARNING FROM KEY INFORMANTS

Key Informants representing Officers in Charge of Study Centres, Part-time country tutors based in these centres and students in provincial towns provided the initial concepts as reported previously. All of these concepts and the discussion that ensues existed as contested notions and open to further debate and analysis. Reflecting on this evidence in Ricoeurian categories, it was possible to identify three formations of opinion: conceptual, propositional and discursive.

CONCEPTUAL ELEMENTS

- Inequality in relationships between the distance students and institution-based lecturers.
- Systemic communication that involves all participants and the materials.
- The nature of the distance adult learner.
- The role of evaluation in distance learning.
- The impact on student performance of lecturer's personal bias or principles of operating in the subject?
- The effect of jargon in lecture notes.
- The effect of presentation of lecturer notes.
- The effects of geographical and urban isolation.
- The effect of expenses directly related to study at a distance.
- The effect of decentralization of resources and support personnel.
- The role of intermediaries such as part-time tutors and librarians in the promotion of effective independent learning.
- Appropriate sources of information for students compiling assignments.

PROPOSITIONAL ELEMENTS

- A desire to relate informally and conversationally with lecturers.
- The notion of discussion with lecturers and tutors as a follow up to receiving written assessment in the form of debriefing and remediation.
- Communication through lecturer-initiated phone calls, face-to-face visits and correspondence of an informal nature.
- Lecturers could provide personal profiles to allow the student to better estimate their values positions.
- Need to promote closer and more effective relationships between students and lecturers to clarify content emphases.
- The idea of being oriented to a subject with weekend symposia.
- External Studies needs to adopt modern teaching strategies with motivating presentation of materials and supplementation of the traditional notes with visual aids.
- Increase the availability of resources and resource personnel in regional centres.
- Provision of training in the negotiation of components of library organization at the outset of a Course of Study.
- The provision of more experience with the use of loudspeaker/conference phone seminars.
- The provision of time saving strategies to aid students in their searches for appropriate literature.
- Tutors would be more effective with training, orientation to the lecturer's values.

DISCURSIVE ELEMENTS

- a desire by some students to avoid close contact with lecturers or other students.
- Notion of lecturers understanding the nature of the distance adult learner.
- The recognition that students have varying goals including enjoyment, personal development and professional development components.
- Evaluation emphases create concerns such as how to satisfy the unknown values framework of a lecturer, the level of achievement considered desirable, how much of personal opinion and local input is desirable.
- The question of students being able to negotiate differing styles in lecture material, especially contemporaneously.
- How to provide support for the geographically isolated student who was not able to attend tuto-

rials, receive first hand advice from face to face contact with lecturers and faced with extra communication and mailing costs and problems.

- What resource factors promote effective growth in independence as a distance learner?
- How to overcome the vacuum existence of tutors and to establish an appropriate relationship between tutors and lecturers/students.
- Is it appropriate to develop an understanding that books are not the only source of information?

ESTABLISHING THE METALANGUAGE OF PARTICIPANTS

The forty interviewees selected for sampling opinion assisted in the identification of the metalanguage of distance learning autonomy by offering the following *discursive* elements:

AUTONOMY-RELATED STRENGTHS AND SUCCESSES IN DISTANCE STUDY

- The fulfillment of personal goals and enjoyment or satisfaction from study.
- Gaining of personal social confidence through study achievements and study with small groups of fellow students.
- Opportunity to live in a favoured location (Far North Queensland) and still be able to study.
- Greater understanding of self.
- Able to continue study when no other way to do it.
- A convenient form of study which allows the continuation of social and sporting life.
- Fitting in with work, family and friends is not difficult because study time is flexible.
- A financial return from employment opportunities through gaining qualifications and skills.
- Improved writing skills have paid off in personal terms with a fuller and more satisfying life.
- An opportunity to be personally productive, to utilize talents hitherto untapped.
- Personal motivation from good assignment results and comments.

AUTONOMY-RELATED PROBLEMS WITH DISTANCE STUDY

- Study that is worthwhile offers personal enrichment, interest, and/or career development.
- Many students seek out courses that offer reasonable study and evaluation expectations.
- Credit values on units need to be equitable within and across courses and relative to quantity of content.
- Guidelines to units of study provided in handbooks often do not give clear indications of workloads or even content.
- Many family (especially children and/or nonsupportive partner) and personal factors constrain comfortableness with tertiary study and specifically with external study where the participants are adults.
- Study groups need to be organized and led with considerable deftness.
- Much of the written material provided by the institutions could be improved for presentation and interest.
- Time management and lack of time represent serious concerns for students.
- The taking-on of too many units of study has created serious concerns about coping, in some cases resulting in total withdrawal for the year.
- For several participants study and assignment writing was conflicting with lifestyle.
- Work and study were often in conflict.
- Not personally knowing the lecturer or the assignment marker caused insecurity.
- Many expressions indicating belief that students have about some lecturers not being sensitive to the special needs of adult distance learners and advocacy of training lecturers for distance teaching.
- The tiring nature of the large amount of reading in distance study.
- Some examples of being extremely worried about sitting for exams.

CONCLUSION

These issues, several audio segments of interviews, anonymously presented profile data on the forty interviewees and my own reflections were presented to the consultative group for advice on the design of essential survey questions. My earlier notion that the promotion of affective elements in distance learning would enhance the growth of learning autonomy was upheld by the panel. Accordingly, from this point I was seeking to find the elements in the students' study and life worlds that they perceived to be contributing to or hindering affective and autonomous growth. The consultative panel were very responsive to the material presented to them and a survey was drafted from the "subjectively probable" and "relatively superior" arguments established in the debate that ensued.

The survey has been administered and data analysed and presented to support a thesis on developing learning autonomy in distance education.

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Focussing on the learner

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Distance education is learner-centred. The dictum is familiar. What does it mean? The theory is that distance education depends on self-instructional teaching materials, designed so that the content is related to students' needs. Several media may be used — print, audio, video — and there will be an appropriate student support system, which may use for example correspondence or face-to-face tuition, computer-aided instruction, self-assessment and counselling. All these aspects of distance education ought to be taken into account when courses are designed. Often, however, the final product suggests that course developers concentrated merely on ensuring materials were self-instructional, and courses fall short of expectations. Why does this occur? What happens during the process of course development to create this gap between intention and performance? This article attempts some suggestions, arising from my experience of distance teaching institutions in several countries.

THE STRANGLEHOLD OF THE TRADITIONAL SYLLABUS

Course outlines are often modelled on existing school, university or professional syllabuses. Course planners may intend a course to cover the same material or may use syllabuses they are familiar with as a source of ideas. But how satisfactory as models are such syllabuses? Often school or university syllabuses are the bland compromise of a committee. The best teachers try to make a syllabus their own, a difficult task even when teaching face-to-face. In the changeover from face-to-face to distance-teaching methods, there is naturally a tendency to take the safe way, to emphasise the traditional parts of the syllabus, to rely on rote learning, and avoid those aspects that are controversial and difficult to teach. This may be partly because the challenge of preparing distance-teaching materials is itself daunting; and course writers choose to interpret the syllabus in the way that looks easiest. But the tendency to traditionalism can also be accentuated during the process of course planning.

Let us consider who plans courses. Usually it is some kind of planning group. The group may include those who will eventually develop the materials, but it is also likely to include some advisers, such as eminent experts in the subject to be taught. The planning group is therefore likely to be larger than the group who will work on the materials, it is likely to contain a number of people for whom this is their first contact with distance education, and it is probable that the experts are numbered amongst the newcomers; thus, those who will have most say in course planning, by virtue of their seniority, may have least experience of distance education. As a result course outlines often reflect the view of those who know little of distance students and their characteristics and who do not recognise their needs. (Worse still, are those subject experts who gave up teaching long ago, and now depend on their eminence and research.) Moreover, those who know nothing of distance education lack media literacy; they have little idea of the respective strengths and weaknesses of print, audio and video, or of the educational potential of an integrated mix of media. A distance-teaching institution can therefore ensure, by the very structure of its planning team, that it produces conservative and pedestrian courses. All too often, the institution makes things even worse by prescribing before planning starts which media are to be used and in what quantity.

ENGLISH LANGUAGE TEACHING: AN EXAMPLE

I take the example of English taught as a second language. Many people complete their education using the medium of English even though it is not their mother tongue. In distance study, English is often an enabling subject, the means to study effectively in other subjects. Let us look at some of the difficulties which arise in designing such English courses.

First, planners often fail to realise the functional nature of such English courses. Conventionally, we recognise four language skills: talking, listening, writing and reading. A syllabus will seek to ensure the development of these four skills according to students' needs. Some course outlines betray a lack of thought about this. There may be plenty of reading and comprehension work — important and easy to present at a distance. But what about writing? If a

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student is taking other courses, he may have to write essays for assignments. Is it not a priority to develop writing skills fast? And what about seminars? The student will need to understand the tutor, ask questions and hold discussions with other students.

Second, distance students will have a different language background to students in the formal system. Their language skills may be rusty. They may have used English little since they learnt it at school. They may, too, have been poor in English at school; limited language skills can lead to failure in the formal system and thus to reentry later via distance education. All these factors mean that special care is needed in designing English courses.

None of this is easy, and it becomes worse when planners face the problem of teaching listening and speaking at a distance with limited resources.

These problems can be overcome, but the inexperienced may lack the courage to try. I once attended a meeting where planners were on the point of eliminating all oral work because they could not think of a practical means of testing students' performance. On another occasion, an English course had been planned without an audio component, and unit writing was far advanced before the writers saw there was a mismatch between the course objectives and print, the medium chosen — too late to change.

ACADEMIC DOMINANCE

Subject specialists naturally have a central role in course planning and development. In distance education, however, administrative efficiency is as important as academic competence. There is a symbiotic relationship between teaching materials and the learning support system, and a danger in overvaluing the academic side at the expense of the administration. In particular, many distance teaching institutions are weak in their management of course development: materials may take years to produce and the elements in a package may be poorly integrated.

You may be familiar with Otto Peters' comparison of distance education and industrial processes. In course production procedures we can sometimes see the most impersonal side of distance education, a production process with a firm division of labour — planner to writer to editor and so on — and minimal communication between each stage. It may happen that a lecturer writes a unit, and a television producer then tries to prepare a complementary programme. The lecturer sees the programme, and is angry because it does not correspond with his intentions. But is the producer to blame? The two have never met or tried to communicate. The system is to blame. The course team, as developed by the British Open University, successfully avoided such dislocation, and as a result the OU has become the lead institution in the development of integrated multi-media courses. Today we are all too familiar with the shortcomings of the team, its expense and heavy time requirements, but we should recognise its importance and seek to develop suitable analogues. In particular, continuity between the planning team and the course development team helps avoid the problems described at the start of this paper.

THE DEPERSONALISATION OF DISTANCE EDUCATION

Academic dominance seems to be typical of university-based distance education. Another kind of bias is common in the business and technical sectors, an over emphasis on learning materials. There is a tendency to talk about learning packages, as though teaching materials are consumer goods, as naturally nutritious to the mind as a packet of fish fingers is to the body. This tendency seems to be associated with open learning, the idea that materials should be accessible for use in a number of ways and thus need to be somewhat freestanding. But such freedom is often at the expense of getting the right mix between learning from materials and learning from a tutor or peers. There may be no organised support system. How "open" is such learning, we may ask. Open, presumably to those with the confidence and competence to learn without support, and closed to the rest of us. How often does idealistic waffle about openness provide cover for poor education?

BACK TO THE LEARNERS

This paper is not meant as a diatribe against the worst in distance education. I am more concerned with those who have tried and failed, or at least have produced courses which do not quite live up to expectations. I do not wish to end on a bleak note. Rather I want to stress that a great deal of second rate distance education is quite unnecessarily so. I have outlined some of the factors that adversely affect course design in the hope that we can find ways to overcome these difficulties. My main message is, however, an old one: the first step in course design, before any planning takes place, must be to get to know the students. An understanding of distance students and their characteristics is essential, along with a knowledge of the educational needs and environment of potential students for that particular course.

I will end with an unfashionable suggestion: can we aim to consult our potential learners, so that they can participate in the planning and development of courses? That way, we can ensure that the curriculum relates to their needs, the media choice is appropriate, the support system adequate and our education truly learner-centred.

The role of the editor as a course developer, at the College of Adult and Distance Education (CADE), University of Nairobi

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INTRODUCTION

There has been a great up-surge in distance education in Kenya. Government departments and private organizations have established distance education systems to deal with increasing educational needs that cannot be met through the traditional school systems. These distance education systems have basically been influenced by local needs and local environmental issues, among them: the constantly rising population; the constantly rising education costs that constrain the national budget annually; and the need to provide educational opportunity to both children and adults which all call for the expansion of educational facilities while financial means remain limited.

Distance education systems work towards a common goal. They:

- provide access to educational opportunities to people who cannot go to school for one reason or other. These opportunities currently range from post-secondary to undergraduate studies;
- use innovative theories of teaching and learning;
- produce instructional materials that are interesting and stimulating to learners, and which aim to sustain the interests of the learners from beginning to the end;
- build in active learning in study materials which puts into consideration the needs and autonomy of the learners;
- use a two-way communication system to support and facilitate student learning as well as assessing students' progress.

COURSE DEVELOPER AS A MEMBER OF THE COURSE PLANNING AND DEVELOPMENT TEAM

Developing materials to meet the above objectives at CADE involves teamwork. The editor, who is also the course developer, is part of the team which includes:

- the principal — who advises on the necessity and other logistics of the programme;
- academic members of the distance teaching department;
- subject specialists who will write the lessons;
- a students' counsellor; and
- the course developer who advises on course development, management and production.

Teamwork begins at the planning stage. The planners have to consider the following aspects of course development among other things. It is their duty to:

- identify the educational needs of the programme and decide how they will be met;
- identify the learners' needs and describe the learner characteristics and how they will affect the programme;
- identify the available resources and constraints;
- identify media;
- outline the programme.

The programme outline includes:

- what form the materials will take, whether they will be study guides or self-contained units;
- media to be used whether radio/audio, print or face-to-face
- duration of the programme;
- number of learners to be enrolled;
- administrative structure;
- collecting feedback information and how it will be used;
- budget for the programme.

The role of the course developer in course planning and development is partly educational and partly administrative. Very often the subject specialists — who are contracted on a part-time basis — have very little knowledge of distance teaching.

The course developer must work with them to ascertain the teaching effectiveness of the course produced. In this regard, the course developer assumes the role of the future student.

THE FUNCTIONS OF THE COURSE DEVELOPER IN COURSE DEVELOPMENT

The functions of a course developer at CADE include:

- finding, briefing and training course writers;
- working with writers to improve the quality of their materials by ensuring that they teach well and that the language and instructions are clear;
- preparing a production schedule;
- preparing materials for print and checking that they are clearly linked with other course components;
- structuring the text and checking details so that it is ready for printing;
- controlling the process of course development.

CADE is currently running a number of distance teaching programmes namely:

- The External Degree Studies Programmes. This programme was launched last year. It has about 600 students all taking the Bachelor of Education degree at a distance;
- The untrained teachers In-Service programme. This course is for untrained primary school teachers teaching in various elementary schools all over the republic. About 5,000 students are currently taking this course.
- Foundations course in Adult Education. This course is for Literacy teachers and other frontline workers working with local communities. About 3,000 students are enrolled on this programme.

All the above courses last from three to six years.

DETAILED PLANNING OF COURSE MATERIALS

The course developer is also involved in the synchronization of the three media used: print, radio/audio and face-to-face contact. Once the course structure has been defined the course team then apportions certain subject areas to the appropriate medium. Usually the print medium carries over three-quarters of the course load. The audio programmes are written and recorded by the correspondence course writers. This is done to ensure that the students hear the voice of their lecturers. The face-to-face sessions are utilised to teach practical areas of the course. Students find these sessions extremely rewarding. The role of the course developers in the selection and use of media is to synchronize all the media used and to ensure that all portions of the course allocation to each medium are treated.

TRAINING COURSE WRITERS

The writers are recruited from institutions of higher learning, local secondary schools and from any other relevant institution. The writers must be qualified in the subjects for which they are appointed to write.

During recruitment the course developer makes sure that the writers meet certain requirements. For example:

- Do the writers know their subjects well?
- Do they have teaching experience at the level for which they are being recruited to write?
- Do they have previous writing experience?
- Do they understand the needs of distant learners or the target group?
- Are they reliable and able to keep agreed deadlines?
- Do they have enough time to write?
- Are they willing to attend frequent meetings to discuss their work?

Once the writers have been recruited, the course developer then explains the process that CADE uses before materials are approved for use, including vetting or reviewing of manuscripts. The writer is told that once he or she submits the first draft, it is taken to a subject specialist who advises CADE of any inadequacies. The writer is then asked to revise the draft incorporating all the suggestions made by the reviewer. The course developer also reads and explains the contract or agreement that the writer will sign binding him with CADE.

During training the course developer introduces the writers to the format, style, approach and methods of the course. They are also urged to observe deadlines. Training is usually done in a series of workshops, which last at least two weeks. After training the writers are given correspondence manuals for reference as they write the courses at home. Basically the new writers cover the following topics:

- what it is like to learn at a distance;
- writing course/topic outlines
- including activities and providing feedback;
- writing objectives;
- writing clearly and precisely;
- the administration of the course.

As the writing progresses the course developer assumes the role of a course designer. He or she checks written drafts to see if the writer is applying the principles of writing distance teaching materials covered during the training. When helping the writer, the course developer discusses the following with the writer:

- reviewing course/subject outlines;
- explaining and checking whether the writer is applying house style format;
- checking the introduction, which is ideally written after the whole lesson is complete;

- establishing link of unit with other units in the course;
- assisting the writer to maintain balance of the unit.

Once the writers have produced the first section of the planned unit (lesson), they can then work on their own. However, the course developer and writers must agree on dates for follow-up so that the writers have optimum support during the writing process. During the follow-up the course developer checks that the unit (lesson) is written at the right level of the learners in terms of content and language difficulty.

THE COURSE DEVELOPER AS A DESIGNER: PREPARING THE MANUSCRIPT FOR PUBLICATION

During the writing process, the course developer will have explained certain rules that govern the general layout, heading scheme, illustrations, capitalization, spellings and abbreviations. This is important because if these aspects of the unit are left until the copyediting stage a lot of work will need to be done, which may waste valuable time.

GENERAL LAYOUT

At CADE the general layout of the lesson is designed so that the students will find the text not only attractive but also well-balanced to work through. The course developer therefore works with the writer to see that the chapters begin in a new page; that the content is evenly and logically distributed to maintain a balance and a logical sequence of the major topics; that exercises have a symbol attached to make them stand out clearly for the student to identify. Listed below are examples of the symbols we have developed:

? stands for SAQ or self-assessment questions (SAQs) which are reflective questions;

◎ is a symbol to identify objectives or take note;

☞ is used to identify emphasised or important points that are not to be missed;

✍ written activity;

📖 open book to suggest further reading;

📕 closed book is used to identify summaries in each chapter or subsection.

All the above student activities are meant to create variety in the text so that the student participates actively when studying the lesson.

The course developer therefore instructs the writer to make these activities stand out in the printed text.

HEADINGS

The course developer also works with the writer to establish a well balanced Heading scheme which takes into account the major topics, sub-topics, sub-sub-topics and even sub-sub-sub-topics in the lesson. For example.

1.	main topic
1.1.	sub-topic
1.1.1.	sub-sub-topic
1.1.1.1.	sub-sub-sub-topic

This is found difficult by some writers but once the course developer has explained that all the levels of the main topic have to be identified and converted into an outline, then the writers find their way. Once the heading scheme has been agreed upon, the course developer discusses with the writers the format they should take.

ILLUSTRATIONS

The course developer encourages the writers to use illustrations where they are necessary and relevant. The illustrations used should be self-explanatory, capture the reader's interest, have instructional value and be an integral part of the text. The course developer then works through the lesson with the writer to:

- specify the spaces needed for the illustration;
- indicate where they should be;
- ensure that captions and labels are provided;
- decide whether the illustrations are to be framed, and/or numbered. This last decision not only adds aesthetic value to the illustrations but it also makes them easy to identify in the text.

CAPITALIZATION, SPELLINGS AND ABBREVIATIONS

To a person who has not written before, this topic sounds obvious. It is not until people start to write that they realise that they are, for example, mixing American and British spellings. Therefore the course developer at CADE has drawn up a list of rules for writers concerning capitalization, spelling and abbreviation. If the writers follow these rules then editing becomes less difficult. The writers are therefore briefed on:

- when to use capitals
- which spellings to use (CADE prefer British spelling system);
- when abbreviations can be used and how they are used.

The course developer encourages writers to underline foreign words and technical terms, for example...

You should plant *sukuma wiki* before the onset of the long rains. ... what does the term *random sample* mean? Then the underlined words are either put in italics or bold type in the final copy for learners to notice easily.

Finally writers are encouraged to use a friendly and conversational style that draws the students close to the study text.

ACTIVITIES AND ASSIGNMENTS

In distance education, the learner must be actively involved in the learning process. In order to do this, the course developer encourages writers to write so that they are more or less talking to the learner in a friendly and encouraging dialogue. This dialogue should advise students on what to do and how to do it, and encourage learners so that they do not give up studying.

Some of the devices used in the text to sustain learner interests are:

(a) objectives — which guide the student as to where he or she is going;
(b) underlining or printing in bold or in italics;
(c) prerequisites of the lesson;
(d) using symbols;
(e) using bullets to break prose;
(f) in-text questions, i.e. self-assessment questions (SAQs) which are reflective questions meant to keep the student alert.
(g) self-test questions which help the learner to review and apply knowledge and which break up content into manageable chunks;
(h) summaries which help the learner to see if he or she has understood the content; and
(i) written assignments whose role is both diagnostic and prognostic.

The students are instructed to return their completed written assignments to the college for marking. Written assignments are used for continuous assessment of the students and to identify any flaws in the course. This leads to evaluation of the programme. Written assignments provide a good tool in giving the learners feedback in distance education; the learner must be guided constantly in how to get correct answers and on how to identify and correct his mistakes. Written assignments play this role very well.

BRIEFING TYPISTS, PROOF-READING, PASTE-UP AND PRINTING

Once the lesson is written and is ready for production it is the duty of the course developer to brief the typists to lay out the pages correctly. Giving the typist instructions on page layout, how to maintain the agreed heading scheme and leave necessary spaces for illustrations and symbols, reduces the editing load and any subsequent typing. The typist is also briefed on the agreed rules of capitalization, spelling and abbreviations.

During proof-reading, paste-up is also done. After that the lesson goes for final corrections and then the course developer submits it to the printing section for running off and dispatch to the learners.

THE ROLE OF THE COURSE DEVELOPER IN TESTING AND EVALUATING DISTANCE TEACHING MATERIALS

The aim of testing and evaluating instructional materials at CADE is to assess their quality before they reach the students.

However, CADE has found it difficult to carry out a pre-test survey — though this would be ideal — with the target group. The major constraint here is time and lack of financial and human resources to pre-test materials in good time before they go to the students. Therefore CADE verifies the validity and readability of the instructional materials during the writing process and by using expert judgement.

During the writing process, the course developer urges the writers to explain all difficult and technical terms and to illustrate their definitions using examples that are familiar to the learners. The course developer also wants to know from subject specialists whether the writer has included the content elements necessary in writing instructional texts for distant learners. In doing this, the course developer asks the subject specialist to comment on a number of things in the lesson. These include:

1. Objectives
    - their clarity, simplicity, specificity: and
    - whether they are stated in a behavioral way which will help the students to manifest the required behaviour;
2. Content outline and treatment
    - sequence and completeness in relation to the topic;
    - whether content is ordered in logical sequence;
    - whether balance has been maintained; and
    - whether there are adequate examples to explain the theories being put forward.
3. Inclusion of motivational and instructional devices
    - whether SAQs, self-tests, summaries, symbols, take notes and other forms of quick checks are appropriate to the target group.
4. Language level
    - level of difficulty;
    - appropriateness of the language; clarity, sentence structure patterns, dialogue and whether important points have been highlighted;
    - readability, and links of lessons, topics and paragraphs in the entire correspondence text.
5. Assignments

As mentioned earlier the role of assignments is both diagnostic and prognostic. The course developer wants to know from the subject specialist whether:

- the questions and instructions are clear to the student;
- the questions cover the entire lesson and whether some sections are not tested?
- instructions on submitting the assignments for marking are clear.

The comments made on student assignments are useful to the course developer during course revision. Such comments are also useful in the development of the subsequent lessons in the programme because the course developer will use them to improve the writing of other lessons in the course.

Finally the aim of generating data on instructional materials from subject specialists is to enable the writer and the course developer to revise the draft texts incorporating the subject specialists' suggestions before the lesson goes to the students. This feedback on study texts also goes to the other writers who are writing subsequent lessons in the same programme.

THE ROLE OF THE COURSE DEVELOPER IN COURSE TUTORING

As we all know the interaction between the student and the tutor is the backbone of the correspondence study method. This interaction which provides a two-way communication enables the tutors to give individual counselling to students on some problems that would otherwise be difficult to tackle through correspondence. This can be done through marking assignments and meeting students at residential sessions. At CADE tutors work on a part-time basis and are engaged to mark and assign grades to students' written work and also to conduct the face-to-face sessions. The tutors, like course writers, are recruited from relevant institutions of learning. They must be adequately qualified in the fields for which CADE engages them to tutor in. The tutors who are recruited to mark students' assignments are trained by the course developer in:

- how to work through the lesson on which the written assignments are based;
- how to comment and guide students towards better performance (negative comments on students' work are discouraged);
- how to give comments that suggest fresh ideas and different opinions that may not have occurred to the student;
- making comments that explain the mark or grade awarded to the assignment.

With the help of the student counsellor, the course developer explains to the tutors about the course. In that connection the tutors are encouraged to counsel students on how to study, when and where to study and how to combine their correspondence studies with their other economic and social commitments.

Jointly with other members of the distance teaching department, the course developer explains the marking scheme to the tutors. This is important because tutors need to be co-ordinated in the awarding of marks to similar lessons. Co-ordination is ensured through one or two-day seminars where tutors mark dummy scripts and compare their marks. The questions are then moderated until the tutors reach a consensus. They can then carry live scripts to mark at home.

MONITORING STUDENTS' ASSIGNMENTS

Students' assignments are handled by the department of the administrative assistant. This officer receives the assignments from students and allocates them to tutors according to subject specializations. Once the assignments are marked, the tutor returns the marked script to CADE. The records clerks working in the Records Section enter the marks and grades into Master cards for each student. The graded assignment is then returned to the student. The role of the course developer in monitoring the assignments is to check from the records that all the lessons have been tested. Where a written assignment is missing — which is very rare — the course developer contacts the writer to supply it.

CONCLUSION

This article explains the role of the course developer as a team member of the course planning and development team at CADE. During the course planning process, the course developer advises the team on the structure of the course and the type of staff who will be required to write the lessons.

When preparing the manuscripts for publication, the course developer advises on editorial procedures as well as editing some of the texts until the drafts are ready for printing.

The course developer is also interested in feedback from students' assignments. This feedback is useful to the course developer for identifying flaws that may make the course difficult for learners. The course developer uses this feedback to revise the course and to improve future programmes. Tutorial comments generate feedback on continuous assessment activities which are built in the study texts. The feedback generated by tutorials is used by the course developer to improve on the lessons in progress.

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The role of al-Quds Open University in national development

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INTRODUCTION

Education at all levels, including higher education, is the most important instrument for development. More and more countries place education as a top priority for national development. The reason for this lies in the fact that education is the major process in developing human resources which, in turn, serve as creative forces for the transformation of social institutions and natural resources.

The traditional thirst for knowledge and the growing awareness of the importance of education in development, employment and social status, has caused an upsurge in the demand for higher education. Apart from increased individual demand for higher education, Arab states are themselves placing greater emphasis on it. Accordingly there is a growing perception of the need for higher education, lifelong education and vocational training.

Between 1970 and 1982, the number of Arab university students jumped from 444,000 to 1.4 million. For the 3 million Palestinians dispersed throughout Arab and other countries, and the 2.2 million living in their homeland under Israeli occupation, a figure of 60,000 university undergraduate students was estimated by UNESCO for the academic year 1977–78. This figure is expected to exceed 100,000 by the end of the century. This means that only 10 per cent of the 18–30 age group were enrolled in an institution of higher education.

From this it can be seen that conventional universities and institutes cannot cope with the increasing demand for higher education. Their inability to cater to these needs, coupled with socio-political and/or socio-economic factors, makes the open university an urgent necessity to Arab countries in general, to Palestinians in particular. It is in response to such concerns that al-quds Open University (QOU) has been established.

With its headquarters based in Amman (Jordan), QOU is a pioneer open learning system in the Arab countries. It intends to utilize modern educational technology and innovative concepts of distance learning in solving the educational and cultural problems of the Palestinian and Arab peoples. In this paper the implications of the shortcomings of the educational system in the Arab countries are discussed. The effective role which distance education in general, and QOU in particular, can play in the development of human resources towards national development is given.

CONSTRAINTS AND IMPEDING FACTORS

There are several obstacles and constraints which weaken the role of the prevailing educational systems in the development of the Arab world. Some of these obstacles and constraints are as follows.

(1) Demographic Factors

The population of Arab countries increased from 122 millions in 1970 to 188 millions in 1985, and is expected to increase up to 280 millions by the end of the century, (average annual growth is taken as 3 per cent, 55 per cent of this population is in the under-20 years age group).

(2) Unfavourable Socio-Economic Structure

The socio-economic structure of the Arab countries suffers from many weaknesses, some of which are related to the educational system, such as the underdevelopment of the technological capacity, the underutilization of the existing facilities, the shortage of qualified personnel and the "brain drain" which robs the region of its best qualified personnel. This caused an increase in the percentage of unemployment in these countries. Side by side with this, there exists an acute shortage of appropriately qualified manpower. Failure to increase employment opportunities in the Arab countries, is another weakness in the socio-economic structure.

(3) System and Quality of Education

Despite the fact that there has been a great improvement in the literacy ratio in the Arab world, 50 per cent of the population remains completely illiterate (not to mention the even higher rate of functional illiteracy). Apart from this, the educational system in Arab countries is marked by the following characteristics:

(a) The methods of teaching at all levels are heavily weighted in the direction of making the pupils memorize texts.
(b) Teaching tends to be dogmatic and authoritarian. It does little to encourage critical attitudes or interest in self-education. It discourages independent thinking and the growth of an inquisitive and experimental frame of mind, that is so essential for development.
(c) A university degree became the object of pursuit, and a mere licence to get a job, thus shadowing the knowledge and skills to which the degree should testify.
(d) Graduates developed a contempt for manual work and most of the educated people regard their education as a relief from fieldwork. Even when colleges of engineering and other technological institutes were established, graduates were (and still are) commonly expected to become deskmen and office employees.

On the whole it can be concluded that the traditional educational systems in Arab countries cannot produce the manpower that can contribute effectively to national development. Hence, an innovative approach to educating and training manpower should be considered as a critical catalyst for solving the problem. The prominent approach which is rapidly spreading throughout the world is the use of distance education techniques, which are regarded as means to broaden access to higher education, and achieve equity at a relatively low cost.

The main purposes of introducing and applying distance education techniques are:

(1) to supplement, augment and bridge the gaps between targets and resources.
(2) to make education and training accessible to the deprived massive groups of people,
(3) to establish a system of imparting education which is centrifugal and diffusive in nature,
(4) to stimulate the knowledge, skill and capacity according to learners' needs and choices.

Having concluded that distance education was the most appropriate method for meeting Arab educational needs, the establishment of al-Quds Open University became a necessity.

EXPECTED CONTRIBUTION OF AL-QUDS OPEN UNIVERSITY TO NATIONAL DEVELOPMENT

In this part of the paper, the role of QOU in the national development of the Palestinians and Arabs is dealt with under the following headings:

I. Academic programmes of studies and training
II. Improvement of the quality of education
III. Self-employment
V. Adoption and transfer of technology
VI. Regional and world-wide institutional co-operation.

I. ACADEMIC PROGRAMMES OF STUDIES AND TRAINING

A cursory look at programmes offered at Arab universities, reveals that the distribution of undergraduate students between the scientific and technological studies on the one hand and the more theoretical areas of humanities and social sciences on the other, does not respond to national manpower needs. This situation has resulted in serious problems in employment, with acute shortages in the scientific and technological areas, co-existing with growing unemployment of graduates in humanities and among "white collar" professionals.

In contrast to such trends, QOU will play a pivotal role, not only in orienting students to assume productive roles as defined by current market forces, but to enable them to meet the challenges of a changing society and the emerging socio-economic realitites. QOU programmes, being task oriented, will establish a closer link between the content of curricula and the actual needs of the society. This promotes practicality and direct contribution to national development. One of the most central objectives, which is emphasized by QOU, is to educate and generate a new kind of student and citizen in the Arab World, one who is (a) trained in a profession, vocation or skill that allows him to assume a productive role in the society, and (b) trained to be a learner, an innovator, a self-sufficient and productive human being, who is able to meet the various challenges of a changing society and overcome the hardships of living under abnormal and difficult conditions.

The Foundation Courses are designed to impart awareness to the student of the achievements of humanity, past and present, and to expose him/her to the social environment and variable problems. Among the Foundation courses are: "Human Civilization", "Learning How to Learn", "Analytical Thinking" and "Contemporary Challenges".

QOU plans to respond to two levels of educational needs: degree programmes leading to the B.A./B.Sc., and courses in continuing education and vocational training and other skills, which will enhance the socio-economic positions of individuals and contribute to social development.

In addressing the individual and developmental needs of Palestinians and Arabs, QOU plans to offer degree programmes in five key areas:

(a) Land and rural development
(b) Home and family development

(c) Technology and applied sciences
(d) Management and entrepreneurship
(e) Educational and in-service teacher training.

The distinguishing features of the degree programmes are:

(i) flexibility in the choice of courses
(ii) vocationalization of courses
(iii) social orientation of curricula
(iv) self-employment.

The emphasis in these programmes is on the interdisciplinary approach. There are two main objectives that underlie such a selection: first, that they respond to actual environmental and societal needs, and second, that they encourage self-employment. By fostering individual initiative and independent and critical thinking, QOU is intentionally departing from the traditional rote system of education, and is concentrating on offering programmes in fields that are vital to the region's development.

(a) LAND AND RURAL DEVELOPMENT PROGRAMME

Despite the fact that the Arab economies are predominantly agricultural, and that a large segment of the population lives in rural areas, the Arab countries have failed to achieve self-sufficiency in foodstuffs. For such countries, no development strategy will succeed unless farm economies are diversified, rural institutions developed and rural youth gainfully employed.

QOU's programme of Land and Rural Development is designed to provide incentive, self-employment, further training and career opportunities for students and people living in rural areas and villages.

The programme lays great emphasis on relevant learning and task-oriented training. It combines courses in agriculture, the environment, rural sociology, rural industries and farming projects. By this it plays an important role in the development of agriculture and rural societies in Arab countries in general, and the Occupied Territories in particular. This programme motivates rural students to stay in their villages and develop their communities, instead of migrating to cities and becoming slum dwellers or unemployed urbanites.

(b) HOME AND FAMILY DEVELOPMENT PROGRAMME

This programme is directed mainly, but not exclusively, towards the female half of the population. It combines, among others, courses in home economics, family relations, principles of hygiene, nutrition, child rearing, care of the elderly, as well as home industries and handicrafts.

This will serve in strengthening the family unit, improving its relationships and enabling the housewife to be an educated, cultured and self-employed productive member, not only socially but also economically.

(c) TECHNOLOGY AND APPLIED SCIENCES PROGRAMME

Most Arab countries are trying to industrialize. However, without a clear industrial policy their plans will not be fulfilled. In theory, appropriate technology must be used innovatively by Arab engineers, but the reality for graduates is different. Engineering courses in Arab universities are given to produce designers rather than applied engineers. This situation is illogical in developing countries where applied engineers and technicians are needed in much greater number than designers. With this in mind, the Technology and Applied Sciences programme was set up. It consists of B.Sc. specializations in Energy, Electronics, Informatics and Electromechanical Engineering.

By responding to the needs of the job market, the programme aims at producing applied engineers who are capable of some design work, and useful for employment or self-employment. It also aims at improving the practical capabilities of engineers, by providing them with in-service training courses and practical field work in workshops, crafts and industries.

(d) MANAGEMENT AND ENTREPRENEURSHIP PROGRAMME

National development requires not only high-quality manpower, but also a democratic organizational milieu for the promotion of effective and efficient management of development projects. This requirement is very crucial in Arab countries. QOU, through its Management and Entrepreneurship programme, aims to give courses in Management, Business Administration, Principles of Law, Economics, Accounting, Statistics etc. The philosophy behind this programme is to produce managers with initiative, practical abilities, teamwork spirit and capable of founding a private enterprise or coping with managing a public institute.

(e) EDUCATION AND IN-SERVICE TEACHER TRAINING

This programme aims to:

(1) provide teachers with the opportunity of extending their professional competencies, thus qualifying those who are not professionally qualified despite the fact that they hold degrees
(2) upgrade the skills of teachers and supervisors to enable them to contribute to the promotion of meaningful learning

(3) contribute to the improvement of the technical, supervisory and administrative standards of practitioners, through task-orientated in-service training programmes, designed to meet specific professional needs of target population, especially pre-school (KG) teachers, and teachers involved with the mentally retarded and physically handicapped

(4) provide in-service education and training to teachers who were unable to complete their academic study and thus enable them to attain the first university degree B.A. or (B.Sc.).

II. IMPROVEMENT OF THE QUALITY OF EDUCATION

The effectiveness of any university is largely determined by the nature and contents of its courses, yet in the case of QOU, individualized instructional materials that lend themselves to self-directed learning are of the paramount importance. Application of these materials in QOU programmes through a multi-media approach will promote discovery learning and critical thinking processes. Thus, learners will become research minded and problem solvers and hence better contributors to national development.

To achieve these goals, QOU is tapping the resources and skills of the best professionals in their respective fields, who can produce the instructional material to the standard of quality and excellence. Although this material is primarily for QOU programmes, it is expected to be used by other universities in Arab countries.

In addition to this, QOU adopts the national language (Arabic) as the basic medium of instruction. This Arabisation makes higher education accessible to almost all of the target population. Moreover, it contributes to the preservation and revival of their cultural heritage.

III. SELF-EMPLOYMENT

While it is true that the creation of jobs depends upon the state of the economy, and the vitality of the social and political institutions of a particular country, education has a big responsibility. QOU, through its programmes, hopes to respond positively to the needs of national development, and to strengthen the motivation for self-employment. Furthermore, students in QOU will be economically productive, as they could work during their studies. Similarly, workers of all categories, who need to update their knowledge and professional skills, or develop new competencies, can do this without leaving their job.

IV. ADOPTION AND TRANSFER OF TECHNOLOGY

Beside the printed material, QOU has opted for a multi-media instructional system including electronic media such as audio-cassettes, video-tapes and computer-assisted learning. A long-term goal involving the use of Arab satellite (ARABSAT) by QOU is also considered. The use of computer-assisted learning (CAL) requires some modifications, due to lack of standardization in Arabic codes in the hardware and software. Such use of technology, together with the graduates from the Technology and Applied Sciences programme, will form a technological basis which, in turn, will help the area in the adoption and transfer of the appropriate technologies.

V. REGIONAL AND WORLD-WIDE INSTITUTIONAL CO-OPERATION

QOU has no aim of becoming a separate entity functioning apart from existing higher education institutions in Arab countries and the Occupied Territories. On the contrary, it seeks to develop a functional and integral relationship with these institutions. Part of this co-operation involves the participation of their professionals in preparing the curricula and instructional material and using their libraries, laboratories, workshops and other facilities. QOU, on the other hand, will make its instructional materials and expertise available to the staff and students at Arab conventional universities.

QOU is building bridges of co-operation with other distance education institutions, through the exchange of programmes and is benefiting from their experience in training and curriculum development. By this QOU is saving money and time in developing educational material, which has been or is being produced by Distance Education Institutes world-wide. In this aspect there is a lot to be grateful for, but much more to be desired.

QOU hopes that Distance Education Institutes in different countries will co-operate more in the exchange of educational material and the transfer of expertise. Thus creating a global distance education network of co-operation and goodwill for the best interests of mankind and peace on earth.

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Language learning at a distance: a dynamic sector of university continuing education in Canada

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INTRODUCTION

The convergence of language study and distance delivery methods has, within the past decade, evolved into one of the most dynamic sectors of university continuing education in Canada. Today, thirty-one Canadian universities operate distance education programs, offering a total of almost 1400 credit courses in about 200 subjects and disciplines.Quite significantly, not less than 17 percent of all these courses are either pure language or language-related courses (e.g. literature, culture, practical translation) which have been developed by university language departments. In Ontario, where twelve universities operate distance education programs, language and language-related courses currently comprise 23 percent of all teledidactic courses offered in that province (Council of Ontario Universities, 1986).

OBJECTIVE

Since developments in Canadian distance education are now being intensively observed and documented (Mugridge and Kaufman, 1986), we shall examine the language disciplines in a national perspective.

THE NATURE AND DISTRIBUTION OF LANGUAGE COURSES

For the purposes of this paper, it is convenient to classify the languages currently taught through distance delivery in Canada into four groups, although there is some degree of overlap:

Group 1: The official languages of Canada: English and French.
Group 2: The major languages of international communication: German, Russian and Spanish.
Group 3: The languages of Canadian ethnic minorities: Dutch, Italian, Polish, and Ukrainian.
Group 4: The languages of antiquity: Latin, Ancient Greek, and New Testament Greek.

The teaching of these twelve languages — nine modern and three ancient — is taking place through 94 distance delivery courses which serve combined course-registrations of approximately 21,000 students annually. Translated into full-time equivalents, the enrolment figure of 4,200 would equal the entire student population of one of Canada's smaller universities.

THE OFFICIAL LANGUAGES: FRENCH

The expansion of French language instruction in recent years has been truly outstanding. Between 1984 and 1986 the number of universities teaching French courses through their distance education programs has grown from nine to thirteen, representing a 45 percent increase in just two years, while the number of courses has risen from 32 to 40 — a 25 percent increase. The steady expansion of French language courses over the past decade offers an indication of the energetic response of distance education to the Canadian "quiet language revolution" (Stern, 1984). In a constitutionally bilingual country where less than one-third of the population claims French as its mother tongue, university language departments have for the most part recognized their responsibility for providing language learning opportunities not only to the recent high school graduate, but also to the mature part-time student who elects to study in the distance education mode. Consequently, the number of French language courses has more than tripled in the last ten years and now represents 43 percent of the total of language courses. The annual French language enrolment figure of 14,500 students represents 70 percent of the total yearly registration in university-level teledidactic language study in Canada.

All but two of the fifteen universities providing language instruction at a distance offer at least one course in French language. Currently among the most affluent is the *Cours Autodidactique de Français Écrit* (CAFÉ) Program developed at the Université de Montréal and designed primarily for the improvement of French writing skills. Operating at that university since 1976 and adopted recently by the Université Sainte-Anne in Nova Scotia, the CAFÉ Program's sequence of three ten-week courses now draws over 12,000 registrants per year. Significantly, more than 75 percent of these learners are female office workers who, in the light of federal and provincial language policies, have recognized the need to upgrade their proficiency in written French.

French language courses intended primarily for francophones are, however, in the relative minority. The larger proportion of French language instruction is aimed at the anglophone population and takes place in the form of comprehensive sequenced courses designed to take the learner systematically through the elementary, intermediate, and advanced levels of language study. In fact, an entire degree program with specialization in French is attainable entirely through distance education at Athabasca University. Although it has not yet approved a full undergraduate degree concentration in French for distance delivery, the University of Waterloo Correspondence Program has become one of Canada's largest providers of French language instruction with its nine French language courses serving over 1500 students annually.

Another notable development in the teaching of French at a distance is the methodological and technological redesign of long-standing courses. The University of Saskatchewan's Independent Studies Program offers a fine example of such quality control and innovation: a French language course with a history of some forty years was completely redeveloped and modernized in 1982 using the course team approach involving a content expert and a professional instructional designer.

THE OFFICIAL LANGUAGES: ENGLISH

In contrast to the preponderance of French language instruction, the teaching of English as a second language by teledidactic methods is not common. Nevertheless, the four-course sequence of English language study for francophone learners provided by Télé-Université is highly popular in the province of Québec and enrols almost 5000 students annually.

THE INTERNATIONAL LANGUAGES

The distance teaching of German and Spanish has a fairly long history in Canada, with the origins of several courses going back at least twenty-five years. Spanish is a particularly popular foreign tongue in view of the occupational and recreational advantages it offers North Americans. The trend in the teaching of Spanish is one of expansion. Four universities located in Ontario, Québec, and Nova Scotia presently enrol over a thousand students in about twenty university-level courses every year.

The eleven university courses in German language are shared by the distance education programs of three universities: the University of Waterloo, the University of Western Ontario, and Queen's University, the latter offering a full concentration in German leading to the B.A. degree. The University of Waterloo has developed distance delivery courses designed for scientific and technical reading.

The study of Russian, despite its importance as a major world language, remains under-represented in Canadian distance education. Distance courses in this language are presently available only through the University of Waterloo Correspondence Program. Soon to be supplemented by courses in scientific Russian, the Waterloo program will offer students and workers in science-related fields an economical alternative to the expense and delay of professional translation.

THE LANGUAGES OF CANADIAN ETHNIC GROUPS

The study of the languages of several Canadian ethnolingual groups, including Dutch, Italian, Polish and Ukrainian, has established its viability primarily through the University of Waterloo's distance education program. These courses allow Canadians to explore their cultural heritage, to discover the ancestral languages of their fellow citizens, and to promote minority language retention in accordance with the principle of multiculturalism entrenched in the Canadian constitution.

THE ANCIENT LANGUAGES

The study of Latin and Greek originated at the dawn of correspondence education in Canada and continues to affirm its vitality through a variety of courses. The appeal of such languages is increasing and in 1985 the University of Waterloo added New Testament Greek to its offering of Latin and Ancient Greek, and Mount Allison University introduced Ancient Greek in that same year.

LANGUAGE SKILLS ACQUISITION AND COURSE DELIVERY MEDIA

Of the 94 language courses presently offered through university distance education programs in Canada 58 courses, or 62 percent of the total, are comprehensive courses which strive to impart the four basic language skills: listening comprehension, oral fluency, reading facility, and writing accuracy.

This methodological approach is particularly applicable to the teaching of modern languages where a balance of writing and speaking knowledge is a primary objective. In such courses the most frequently adopted medium for providing oral-aural training is the audiocassette (Karpiak, 1986).

Due to its low cost and universal availability, the audiocassette functions as the principal medium in audiotape-based courses and as an auxiliary medium in course delivery systems based on print, radio, and television. In Canada, 83 percent of all distance language courses use audiocassettes as an integral component of the course package. This compares very favourably with the results of an international survey of distance delivery language courses conducted by Athabasca University, which reported a 64 percent rate of audiotape use (Stringer, Shale and Abrioux, 1982). In addition to audiotape and print, distance language courses are also delivered by television and radio (Abrioux, 1982).

STUDENT SUPPORT SYSTEMS

In language courses the mainstay of in-course support is the two-way communication process between the learner and the course instructor or tutor. The educational media and technology of the support system range widely. Thus, in addition to print, courses presently utilize, in various combinations, the audiocassette, the telephone, the audio-teleconference, and face-to-face sessions.

The telephone provides the standard channel of synchronous two-way communication, and provision for its use is a feature of virtually every distance education program in Canada. The audiocassette also serves as a medium for the support of language students. Learners and instructors use cassettes in a variety of ways: to get acquainted at the start, to talk on an individual basis during the course, to provide and discuss feedback on assignments, to conduct oral drills, etc. The audiocassette is also used in certain courses to integrate distance learners into a geographically distributed "class", that is, to address supplementary and remedial material to an entire group in the form of an audio-tutorial (Karpiak, 1985).

Audio-teleconferencing has only been used experimentally in several language courses at the University of Waterloo, and there are no reports on the applications of computer-assisted language instruction in distance education courses. However, research and experimentation is taking place at a number of universities in the computerization of on-campus language courses and this technology may soon be integrated into computer-based distance language instruction.

CONCLUSIONS

The response of Canadian distance education to language legislation, to new attitudes toward linguistic versatility and toward language study in general, has been energetic and extensive. With fully half of Canada's distance education universities now engaged in language teaching, the learners of today have an unprecedented choice of methods, media, and independence levels in their studies. Furthermore, experience has shown that distance teaching methods are effective in language instruction (Karpiak, 1982; Holmberg, 1985). As a result, the viability of distance language study has become firmly entrenched in the Canadian continuing education system.

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Australian distance educators: innovators or profiteers?

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INTRODUCTION

Profiteer: A person who makes excessive profits, especially by taking advantage of times of difficulty or scarcity. (The Everyday Oxford Dictionary, Oxford University Press, 1981).

Since 1985 moves by the Australian federal government to promote the selling of higher education to overseas students, principally in the regions of South-East and North Asia have stimulated new directions for those institutions engaged in distance education. It is no accident that the early players in the off-shore marketing stakes have been institutions which have already been promoting their courses within Australia over the past decade, largely as a survival measure. As well, some distance education units in large metropolitan institutions have glimpsed the possibility of raising their profiles within their institutions by pursuing the goal of marketing courses overseas.

Until 1986, two categories of overseas students were permitted to study in Australia:

1. Fully sponsored students
2. Private, subsidised students who paid a proportion of full fees.

In 1985 the federal Minister for Education took the decision to allow marketing of courses to overseas students on a full-fee basis while pledging to maintain the two categories of students above.

Higher education can now be marketed to overseas students in two ways:

1. By attracting students to study on Australian campuses
2. By sale of distance education courses to students who continue to reside in their own countries.

Two reports, both presented to the government in March 1984, addressed the issue of Australia's policy on overseas students within the context of Australia's overseas aid programme. These were the *Report of the Committee to Review the Australian Overseas Aid Programme* known as the Jackson Report and the *Report of the Committee to Review the Private Overseas Student Policy,* known as the Goldring Report.

A major recommendation of the Jackson Report was that:

> Education should be regarded as an export industry in which institutions are encouraged to compete for students and funds... Scholarship funds would be simultaneously provided through the aid vote to promote development and equity (p. 87).

With regard to full cost recovery by charging fees to overseas students, the Goldring Report comes to the opposite conclusion:

> While a market-based full cost recovery approach to overseas students is a possible alternative to the present system, such an approach could not be easily accommodated into the Australian education system as presently structured... a market-based approach would also upset many educational, cultural, foreign policy and other interests which surround the programme, based as it is on a view of education as a commodity which can be bought and sold in accordance with the dictates of the market (p. 85).

When in 1985 the Minister for Education took the decision to allow marketing of higher education courses her approach was generally seen as supporting the spirit of the Goldring report, but events since that time have shown the government to be oriented towards the free-market view of the Jackson report.

In the years that followed, several Australian institutions were swift to respond to the Minister's initiative. The Commonwealth Tertiary Education Commission (1987) noted in its *Report for the 1988–90 Triennium* that in 1986, 500 full fee paying overseas students were enrolled in Australian institutions with the majority off-shore and in 1987 some 1600 enrolments were expected in higher education courses with about 60 percent studying by distance education. The years 1986 and 1987 also saw vigorous representation by Australian institutions at vari-

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ous education fairs in the region, as well as representation by the International Development Programme which represents universities and colleges of advanced education and by AUSTRADE, the Australian Trade Commission.

While most institutions have been restrained in their approach to marketing, others have moved with some haste to establish a base in specific countries, unaware of the lessons to be learned from the British experience in the early 1980s (see for example Belcher, 1987) or perhaps unwilling to benefit from this experience.

WHY MARKET HIGHER EDUCATION?

The reasons for marketing Australian education to overseas students are complex but may be summarised as follows:

1. To boost export earnings for Australian goods and services;
2. To enable institutions to cope with reduced government spending on education;
3. To enhance the viability of small regional institutions.

Behind these arguments lies a clear ideological preference for an economic stance which views small government and the deregulation of the economy as highly desirable and which argues that an investment in education should be borne by the individual since the primary benefits accrue to the individual.

The case for marketing distance education in particular seems to rest on the fact that Australia has a large pool of qualified school leavers who are unable to find places in the institutions and courses of their choice. It would be undesirable if fee-paying overseas students were seen to be occupying places which might be filled by Australians who are currently denied access to higher education. Since tuition fees cannot currently be charged to Australian students, they could not buy a place even if they wanted to.

The cost structures of distance education as it is practised are such that the fixed costs of course preparation are best spread over as large a number of students as possible. If the additional students in a course are overseas students paying full fees, so much the better.

At an attitudinal level, distance educators have made it easy to conceptualise this mode of education as a commodity: they typically refer to the "industrial" nature of distance education to "consumers" who are provided with a "package" or a "product" which is "delivered" and "maintained".

THE NATURE OF THE MARKET

Any proposal to market Australian higher education on a large scale rests on the assumption that a substantial market exists. A survey was scarcely needed to indicate a very high level of unmet demand for higher education in South-East and North Asia. The problems is, however, one of identifying the kind of demand and the extent of the demand for Australian qualifications in particular.

In 1985 the Australian government sent an Education Mission to this region to survey the commercial opportunities for Australian education. As a result of this survey, the Mission concluded that by 1988 Australian educational institutions could develop markets for services and other activities in the vicinity of A$100 million per year in foreign exchange earnings. This would mean that foreign exchange earnings from marketing education would be comparable with leading manufacturing sectors.

There was some account given of attitudes towards distance education in the report, principally in Indonesia, Malaysia and Hong Kong. It seems that distance education has some potential as a marketable commodity in the region surveyed *but* it would be more a matter of developing courses tailored to suit local needs rather than enrolling students in existing courses. Given the heavy investment required to develop new distance education programmes, the argument for economies of scale brought about by marketing existing courses disappears if there is no substantial market for these courses.

Furthermore what we sometimes choose to ignore in our discussions of marketing distance education to Asian populations is that it is not often considered to be a viable alternative to campus-based education within these countries. Potential students may well need a good deal of convincing and their potential employers may regard qualifications obtained in this way with some suspicion.

There are as well the attitudes of governments in the region to consider. In spite of an acknowledged unmet demand for higher education, they are not generally willing to relinquish control over their education systems to the extent of allowing providers from other countries to fill the educational gap without close scrutiny, and in some cases, without formal registration.

IMPLICATIONS

Market Control versus Central Control

Perhaps few educators have seriously considered the implications of substituting market control for central control of higher education.

Some possible outcomes are worth considering by those educators who believe they have everything to gain and nothing to lose by entering the educational market place:

1. A focus on commercially viable courses at the expense of traditional higher education courses.

2. Reduction in the overall number of institutions by closure of those that are not commercially viable.
3. Reduction in the range of courses offered by institutions.
4. Larger class sizes or reduced lecturer contact to ensure commercial returns on investment.
5. Fluctuation of courses offered by institutions in line with market pressures.
6. Introduction of courses without adequate planning and funding in response to market demands.

As McCullough (1986) points out:

> Market based systems, by their nature, seek to maximise the return of capital and labour invested and therefore tend to skew resource allocation to areas which generate the highest rate of return. Demand and resource allocation are exclusively mediated by the price mechanism and the operation of market signals (p. 52).

It is difficult to believe that the possibility of taking in A$100 million per year from the sale of courses to overseas students will not produce some winners and some losers in the educational marketing stakes or that it will not distort the higher education system as a whole in spite of the rejuvenation that it might bring to some sectors.

The Commonwealth Tertiary Education Commission which has the role of planning for Australian tertiary education has been charged with a co-ordinating role and with the responsibility of approving fee levels for overseas students. At the time of writing, however, no general policy guidelines had emerged. Already a degree of secrecy has entered into the situation and often the best way to find out what Australian institutions are doing is to visit the countries which they have targeted for marketing.

IMPLICATIONS FOR DISTANCE EDUCATION

Distance education could quite easily be thrust into the limelight in Australian higher education in a way that was unimaginable even three to four years ago. Demands for the skills possessed by distance educators could increase dramatically and those who work in the field of education might easily come to believe that at last their educational enterprise was understood and valued in its own right by the rest of the educational community — that they had at last achieved "parity of esteem".

On the negative side, however, there is room for caution.

We must remember that in the context of this discussion distance education is being seen by government and by higher education institutions as a means to an end: to boost expert earnings and derive income for institutions while containing the number of overseas students who study on Australian campuses.

Without adequate financial support, distance educators may well be forced into a situation where they are providing a service to overseas students which they know to be inadequate — as is sometimes the case with Australian students — because their institutions refuse to commit funds for the provision of adequate support services (such as pre-enrolment and post-enrolment counselling, tutorial support, good feedback on assignments, support with English language) or for the development of courses tailored to suit the requirements of clienteles. Some students may persevere under these circumstances because this represents their only chance of attaining a higher education; others may choose to buy their education elsewhere. In neither case will the reputation of Australian distance education be enhanced.

If the Asian market for distance education courses proves to be short-lived or unreliable, then it is distance educators who will bear the brunt of this economic failure. Where does that place our claims for distance education as a viable alternative to mainstream education in the eyes of the educational establishment?

CONCLUSION

Are Australian distance educators the "new profiteers"?

Certainly at the behest of government many are attempting to take financial advantage of a scarcity of higher education in the region close to Australia. But could we predict that their profits will be excessive? By control of fee levels the Commonwealth Tertiary Education Commission (1987) seems determined to ensure that profits are "modest":

> The Commission supports the introduction of full fee overseas students as a means by which higher education institutions can increase, *at least in small measure*, the income they derive from other than government sources (p. 112) (Emphasis added).

This is bureaucracy speaking and precisely the kind of bureaucratic control that has engendered a swing of attitudes towards a market-based approach to education. It is difficult to imagine that institutions, hard pressed for funds, will tolerate such control. Likewise it is difficult to believe that the federal government with its current emphasis on small government, will accept such a modified free-market view of the marketing of educational services.

Besides, once a fee is set, there appears to be no limit on the numbers of students that an institution can enrol at a distance and no provision for ensuring that the courses offered are appropriate for those students or that they receive adequate support services.

I do not suggest that Australian distance educators are by nature unethical in their practice — quite the reverse. Neither do I suggest that they are exceptionally naive in their approach to the marketplace. What I do suggest is that the desire for recognition by the educational establishment which is long overdue may lead us to acquiesce to institutional and governmental demands to market our wares without due regard for the consequences.

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Distance education and the older student

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A major demographic change is taking place in many advanced industrialised societies. People are living longer thanks to better social welfare, health care, employment conditions, and general living environment.

The number of older people and average life expectancy have increased dramatically in the twentieth century. In the United Kingdom in 1901, only 5% of the population were over 65 and the average life expectancy was 50 years. By 1981 the proportion of older people had climbed to 18% (10 million people) and a woman who reached 65 could expect to live another 16 years and a man another 12 years. In the USA the number of older people rose from 3 million to 25 million (11% of the population) between the turn of the century and 1980. In both the USA and the UK the over-60s are the fastest growing group within the population[1]. The pattern is similar in most western industrialised nations. More people can now look forward to active years beyond the normal retirement age. For them retirement opens up a new phase of life.

Over the past decades there has been a rapid expansion of research into ageing and learning and in the provision of educational opportunities for and by older people.

This research has questioned common stereotypes and myths about age[2] and reassessed the relationship between age, physical decline and learning abilities[3]. This period has also witnessed the emergence of educational gerontology as an academic discipline and the formulation of concepts of lifelong learning.[4] The number of educational programmes for older people has grown, with the establishment of the first University of the Third Age in France[5] and the rise of self-help movements such as the U3A in the UK[6].

Does distance education have a role to play alongside other formal and non-formal learning opportunities? The experience of older students in the U.K. Open University indicates that distance education has considerable potential as a mode of study for older people.

The Open University Older Students Research Group was set up in 1981 to examine the experience and performance of the 3500 Open University students aged 60 and over taking degree level courses in order to assess the effects of the teaching system and identify any additional requirements older students might have. A later project involved a more detailed examination of students study methods and compared the attitudes of older students to study in the Open University and in a range of other educational organisations[7].

Responses to a postal questionnaire showed that students' main motives for studying were to make up for the lack of university opportunities when they were young and to keep their minds active. The most important reason was to continue their own personal development and to stretch themselves[8].

Two thirds of the older students were apprehensive about returning to study and especially concerned about possible memory problems, coping with the demands of study and sitting written examinations. In fact students had fewer difficulties than expected. The great majority were very enthusiastic about their studies and said their expectations had been largely fulfilled. Students said they had enjoyed learning, had been stimulated by new ideas and had felt a sense of achievement.

Older students also attained a high academic standard. The performance of older students compares favourably with all other Open University students and there is very little difference in the overall pass rate for courses (based on continuous assessment of assignments and an end-of-year three-hour examination). Students aged 60–64 are one of the most successful of all student cohorts. Our study indicated that the University, particularly its tutorial and counselling staff, should be alert to the anxieties of older students so that assistance can be given. We concluded, however, that it was not necessary to treat older students as a special group.

Why are older people attracted to distance education and what factors account for their success? Partly it is the students themselves.

Most had good memories of their own schooling and in later life had taken other courses for personal interest or in connection with their work. They approached Open University study with a very positive attitude and were determined to do well. This is unlikely to be the whole answer.

In most subject areas the academic discipline has changed since the time older students completed their initial education. Few are likely to have recent experience of degree studies and fewer to be familiar with distance education. In addition, the Open University dit not aim to devise an educational programme for older people nor make special provision for them.

Older people may be anxious about coping with undergraduate work and novel study methods but of course most of their worries are shared by all adults returning to education. The suitability of distance education for older people lies in the fact that most distance teaching programmes have been designed specifically for adult students. They cater to the needs of adults re-entering education, possibly after many years absence, and lacking skills and confidence. It is because the Open University is accessible, flexible and supportive like many other distance education institutions, that it has such appeal for the older learner.

ACCESS

The Open University offers access for older people in two ways. First, admission to the university is open to any person over 18 and there are no academic entrance requirements. This is particularly significant for a generation whose lives and education may have been disrupted by the Second World War. Older students in the Open University are atypical of their generation with regard to their educational qualifications. In the national over 60's population less than 5% possess a degree compared with 8% among older OU students, of whom a further 20% possess a university diploma or teaching qualification. This reflects the professional and managerial background of many students. The Open University has also attracted some older adults who have few educational qualifications including nearly 20% who have no formal qualifications.

Second, many students would find it difficult or inconvenient to attend a conventional university or college. Distance education has many advantages: the course is brought to the student who does not have to journey to classes. When asked why they chose Open University, most older students said that they liked the concept of an open university and preferred to study at home.

It has been estimated that about 300 older people are studying for higher educational qualifications in conventional universities and colleges in the U.K. In contrast, in 1985, there were 3227 people aged 60 or over registered as Open University undergraduates out of a total undergraduate population of 67,433 and a further 367 older people were taking single degree-level courses. It is a measure of the appeal of distance education that approximately 90% of all older people taking degree level courses in the UK are studying with the OU[9].

FLEXIBILITY

Distance education gives students greater control over their studies than conventional programmes with the institution's schedule of set classes at set times.

The modular structure of the Open University curriculum is very flexible. Once students pass a foundation course there are no restrictions on course choice and someone could put together a degree profile with courses from all six faculty areas (Arts, Social Science, Education, Mathematics, Science and Technology). In practice older students strongly favour Arts courses and the most popular subjects are history, philosophy, art history, religion and music. Students can also decide their own workload and may take courses worth between half a credit and two credits a year. If they have other commitments or want a break they can give up their studies for a year or more and return when they wish.

Perhaps the most flexible aspect of distance education is the freedom to determine the place and pace of study. The individual student decides when and how to learn, and establishes a pattern of study suited to lifestyle and other activities. Some older students felt they needed more time than younger students because it took them longer to absorb the course material and they found studying physically tiring. Others thought they had more time available and greater freedom to plan than those in employment or with young families. Many older students regularly studied for two to four hours on most days each week.

SUPPORT

Distance education has developed many strategies to support the home-based learner studying largely or totally alone. The Open University teaching and student support system is designed to ensure that the undergraduate programme is genuinely open to all adults regardless of their educational background.

All undergraduates begin with a foundation course that introduces them to degree level study and distance learning methods. A package of preparatory material for each foundation course is sent out well before the start of the academic year. The University's thirteen Regional Centres also offer written and personal information and advice to enquirers and applicants.

The services provided for students with disabilities are also available to older students whose health is deteriorating. Many of the older Open University students have a hearing, visual or physical impairment. One in eight of the 60–69 age group was disabled and nearly one in four of the 70 and over age group. To help students the written course units have been put on audio cassette and transcripts of television and radio broadcasts cna be supplied. Every effort is made to meet special educational or living requirements at summer school and measures can be taken to compensate students who have a medical condition which would affect their ability to take an examination on an equal basis with other students.

Tuition and counselling is a major component of the student support system. Students in their first year are linked to a tutor-counsellor who grades assignments, holds preparatory sessions, runs a group-tutorial programme during the course and continues as counsellor throughout the student's Open University career.

Though older students show a preference for learning at home, it should not be assumed that they wish to study in isolation. Most welcome occasional contact and two-thirds of older students say they attend tutorials regularly. One-in-ten belong to student self-help groups. Personal contact is an important dimension of Open University study for older people and is reflected in higher tutorial attendance rates and greater satisfaction than younger students with tuition and counselling services.

The benefits of the Open University's system for outweigh the defects of an educational programme which has not been geared to the older learner. Written examinations cause considerable anxiety among older students and it is probable that some older people are at an inherent disadvantage in a timed examination which puts a premium on sustained concentration and effort for three hours. In general, examinations may be inappropriate in study programmes for older people but in the Open University context it is clear that students wish to take a course under the same conditions as all other students and do not want concessions which might devalue their achievement.

In the UK the main area of concern about older students is not with distance teaching methods but with the low level of involvement in education. Studies suggest that only 2% of the over 60s are engaged in any form of educational activity[10]. A number of explanations for this have been suggested including negative experiences of education in the past and the failure of the educational system to develop relevant study programmes. It is also likely that many are deterred from education because of stereotypes which associate old age with physical and intellectual decline.

The Open University's combination of print and audio visual teaching media with local tuition and counselling appears well matched to the interests and requirements of the older learner seeking a stimulating educational programme. If there are interested older people who succeed with undergraduate study then almost certainly there would be an audience for a much broader range of courses at a variety of levels.

Distance education is an eminently suitable mode of study for older people. If distance education can build on its existing strengths and respond to the concerns and support needs of older students then there is a real chance of overcoming the inhibitions and anxieties which act as a barrier to large scale participation by older people.

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Distance education: unique learning opportunities at the secondary and elementary grade levels

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INTRODUCTION

In this era, education is a continuing, lifelong experience. The United States is experiencing a resurgence of interest in adult education. A recent best-seller in American popular literature has placed emphasis on a broadly accepted value:

> The employability, dignity, security and self-respect of individuals, typically, and for the majority of men now hinges on their education... A man's education is by far his most precious investment, and in effect confers his identity on him. Modern man is not loyal to a monarch, or a land, or a faith whatever he may say, but to a culture... (This) school-transmitted culture, not a folk-transmitted one, alone confers usability and dignity and self-respect on industrial man (Gellner, 1987).

For professionals, such as scientists, engineers, educators, the lifelong pursuit of education is critical for the continual updating of skills and knowledge in their field. Unfortunately, continuing education for teachers at the elementary and secondary grade levels is not an easy undertaking. The structured workday of grade school teachers leads to a sense of isolation from colleagues. Little opportunity exists for teachers to meet on a regular basis to share instructional ideas and resources. Although many teachers have developed new methods and materials for improving classroom instruction, the dissemination of these innovations is limited to the students they teach. Teachers cannot readily exchange ideas and resources with colleagues outside of their immediate place of employment.

Distance education via computerized conferencing can provide unique learning opportunities for teachers and their students within the boundaries of the classroom and school (Edwards, 1984; Kimmel and Manock, 1984; Manock, 1986; O'Shea, et. al., 1986). In addition, the acquisition, evaluation and appropriate utilization of instructional materials, as a critical aspect of the educational process, has benefited from advances in microcomputer and telecommunications technologies.

COMPUTERIZED COMMUNICATIONS

Electronic messaging systems and bulletin boards are now readily available to educators. Further development of telecommunications utilities will result from the failure of more conventional modes of information exchange (telephone, mail, meetings, newsletters etc.) to meet the needs for disseminating the ever increasing body of information essential to successful teaching. We are now pursuing opportunities for more comprehensive applications of electronic telecommunications to distance education through the use of New Jersey Institute of Technology's Electronic Information Exchange System (EIES), a computerized conferencing system that can be accessed via telephone lines from any location where a microcomputer with modem is available.

Electronic communications offer an innovative approach to improving instruction. They link educators to a wide spectrum of information sources, allowing for fast and widespread delivery of educational services and information. The information storage, organizing and sharing capacities of EIES permit teachers to exchange ideas and instructional resources in support of on-going curriculum improvement. Now teachers can "meet and work" with colleagues and experts in diverse settings without leaving their schools.

Interaction between system users is through typed communication. The ability to send text over long distances instantly permits teacher interaction on a global scale. Through this medium, students are also becoming involved in stimulating activities that extend their imagination and interests beyond the confines of the classroom. Keyboard and literacy skills are developed in many students who are highly motivated by the opportunities available through keyboard communications.

Computerized conferencing not only brings the outside world into the classroom, it takes the student and his classroom out into the world to discuss topics of interest with students and experts at distance locations through participation in interschool activities (Edwards, 1984). Collaborative scientific experiments and projects usually involve the collection and analysis of data from geographically dispersed locations and interpretation of the results of the experiments.

EIES is a computerized conferencing system, in operation since 1975, and is dedicated to exploring the use of computers to facilitate group communications and advancing the forefront of knowledge in computer-mediated communication systems (Lerch, 1983). Now an international system, EIES has more that 2,000 users across the United States, the South Pacific, the Caribbean, and Europe. The following services are available to users:

- Messages may be sent to an individual, a number of individuals or to a special interest group. All messages are retained in computer memory until the intended recipient has the opportunity to dial in to the system. Notification of message delivery is automatically sent to the originator.
- Electronic conferences permit groups with common interests to contribute to continuously developing "proceedings". Unlike the message, conference contributions are retained indefinitely or until a chosen conference moderator has the opportunity to cull unneeded or outdated contributions. The search and retrieval capacities of EIES permit participants to obtain particular conference contributions through nested searches. Unlike typical face-to-face conferences, "latecomers" can access prior contributions.
- Notebooks are personal computer memory allocations for drafting and co-authoring material which may be submitted or transferred to other parts of the system (perhaps to one or more conferences, or as a message to a group or an individual). The ability to electronically transfer text files is a major feature of the system. Thus, laboratory procedures or lesson plans can be developed by one or two teachers and then shared with other colleagues by transferring the finished product to an appropriate conference.
- Advanced features of EIES include databases and mechanisms for such tasks as searching and retrieving, indexing, merging text and conducting surveys and evaluations.

LEARNING OPPORTUNITIES THROUGH DISTANCE EDUCATION

Our efforts to apply the features of EIES to the inservice education of teachers through distance education has focused on a number of directions:

- informing teachers of new developments in pedagogy, and updating their subject-matter knowledge;
- helping teachers with curriculum improvement and instructional materials development;
- fostering the involvement of students in distance learning and student-to-student and student-to-expert communications;
- pre-service informal teacher education as well as formal coursework for academic credit.

Our past experiences and intended activities are described below. Although our efforts focus on science education, these applications of communications technology can be extended to other disciplines and age levels of learning.

PROFESSIONAL DEVELOPMENT AND CURRICULUM IMPLEMENTATION

The New Jersey Institute of Technology and Fairleigh Dickinson University have been collaborating on the application of EIES for the improvement of elementary and middle school science teaching. These efforts have concentrated on the continuing professional development of teachers at these grade levels. Our most recent efforts have dealt with the impediments to curriculum enhancement. Simply put, we are using EIES to heighten opportunities for teacher interaction and access to instructional resources. All of our work with teachers has emphasized teacher collegial management for self-improvement. Traditional face-to-face meetings and workshops ensure that participants in our projects identify their own needs and avenues to professional growth and renewal. Professors in the universities are their colleagues and resource persons, not managers or mentors. Traditional meetings permit teachers to get to know one another in a way that is not possible over telephone lines. Additionally, laboratory acitivities and demonstrations are explored with peers on these occasions. Meetings are held at six-week intervals. Large distances between teachers prevent more frequent scheduling of these sessions.

Much of the professional development and curriculum work takes place over telephone lines on EIES. These communications keep the spirit of exploration and renewal alive between scheduled meetings. New and modified curriculum materials that are initially explored in laboratory sessions continue to be studied in a group conference after teachers have returned to their schools. What appears simple to teachers in a university laboratory on a Saturday morning can be far from successful on a Monday morning in the classroom with 25 youngsters. Students may ask questions with respect to an activity for which the teacher does not have an answer. Directions for an activity may reveal an unsafe practice or lack necessary support materials. On-line communications help teachers with the implementation process when these problems do arise.

Two years of workshop and computer communications activity has begun to reveal information about teachers' in-service needs. A review of the EIES conference transcript for this project demonstrates that teachers do indeed ask questions related to theory and principles presented at workshops. Moreover, teachers permit students to ask questions of the university faculty during and after class time with teacher supervision. A great deal of attention has been given to the task of preparing support materials (worksheets, data sheets, quiz questions etc.) for the workshop activities experienced previously. These materials are retrieved at a later date by other teachers as needed. A continuing dialogue has also developed within the conference related to evaluating our project goals and accomplishments. The most consistent change evident through transcript analyses is the growth in leadership exhibited by teacher participants. Professors at the New Jersey Institute of Technology and Fairleigh Dickinson University are quite pleased to see this intended development.

STUDENT ORIENTED ACTIVITIES

School-based investigations that call for wide area data collection now dominate the interests of many student and teacher participants who use EIES. The system is used to pool data collected for projects such as the collection and sharing of Radon detection findings in participants schools; meteorological data related to storms crossing northern New Jersey (amounts of precipitation, wind directions, duration of storms and pH of precipitation) and the use of homemade astrolabes, short wave radios and chronometers to determine the latitude and longitude of participants' schools. In addition to the collection and storage of data, teachers use the conference to explain how the data are interpreted during their science lessons.

Student involvement in these projects provides them with a demonstration of the power of the computer and its utilization in distance education. Classroom learning of basic concepts and theories of science is enhanced by the performance of related experiments and the gathering of data on topics of interest to students in other schools who help collect, share and interpret data. Co-operative interschool projects erase local and national boundaries leading to the eventual elimination of the isolation school faculties experience. These collaborative projects are now underway involving authors and science educators from the United Kingdom.

PRE-SERVICE EDUCATION AND COURSES FOR CREDIT

The use of computerized conferencing (CC) in distance education for the delivery of instruction can be viewed in two modes: the "adjunct mode", where CC is used in support of regularly scheduled class meetings, and the "on-line mode", where CC is the total medium for the delivery of instruction. Although CC is perceived to have a great deal of potential as a delivery system, we recognize that some subject areas (e.g. science laboratories) must include some instruction requiring face-to-face meetings.

The "adjunct mode" allows for augmentation of traditional lectures, electronic course enrichment and tutorials. Typically, students access class messages containing such information as the dates of upcoming tests, comments that apply to recently discussed material, questions and answers that did not come up in class and suggestions by the instructor that will make assignments more understandable (McConnell, 1987).

The "on-line mode" (sometimes referred to as the electronic university, or virtual classroom) involves the combination of electronic mail, electronic conferences, electronic notebooks, privately shared files and selective document retrieval. All assignments to be graded are sent electronically to the instructor. Through these media student work can be made available to the entire class as well as to the instructor for critique and discussion. On-line examinations and tracking (the following of student progress and performance with class assignments) are possible. The use of electronic "visiting lectures" by outside experts and team teaching are other possibilities. In addition, students can do case studies, team projects and share their assignments with other students. The major benefits of this mode of instruction is that students can participate in course activities at the time and place of their convenience which is a great advantage in a modern fast paced, technological society.

CONCLUSIONS

The versatility of a computerized conferencing system such as EIES makes for an effective utility to enhance the educational goals and professional development of teachers who are quite distant from each other or a readily accessible educational setting. Secondary and elementary education are particularly enhanced by using computerized conferencing:

- as an aid in the dissemination of recently developed curriculum materials and programs;
- as a means for teachers to interact with curriculum developers and teachers who have used specific materials;
- for planning training sessions tailored to the needs of teachers and their students;
- for sustained post-workshop interactions among workshop participants throughout the school year as teachers implement curriculum materials; and
- for formative evaluation of curriculum materials during the implementation process including the development of instructional strategies and implementation plans.

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Distance education and national development in Tanzania*

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INTRODUCTION

The program of the U.S. Agency for International Development (AID Rural Satellite Program) carried out under the umbrella of Telecommunications and Rural Development presents striking lessons for developing countries like Tanzania. In particular:

The need for distance education programs is particularly great in the Third World where expertise and physical resources are limited and the bulk of the population is in rural or remote areas. Telecommunications can be a powerful means for the sharing of human resources and the management of widespread development projects.[1]

Two-way communication between student and tutor *who are at a distance* is the outstanding characteristic of distance education. The communication need not take the form of written messages but can be effected by telecommunications, tape-recording or other educational technology.[2]

DISTANCE EDUCATION AND DEVELOPMENT

The contribution of distance education to national development is that:

1. Distance education provides cheap and efficient management of teacher training and up-grading in combination with other means of instruction.
2. Distance education courses permit rapid curriculum reform. Since much of the teaching can be handled by correspondence, it becomes possible to counteract the conservative influence of teachers trained to reach different goals according to an old curriculum.
3. Distance education leads to an integration of education with social reality.
4. Unemployed school leavers are an essential target group for rehabilitating and re-educating by distance techniques so that they can contribute productively to the development of their societies.
5. A certain portion of the adult population has a basic education which can enable it to take distance education courses where the regular educational system cannot serve it. Among these adults include middlelevel civil servants, peasant-farmers and private businessmen on whom the implementation of national development projects ultimately depends. Such adults are often inadequately educated and need special training in specific subjects or fields of immediate significance to their occupation. In most cases, they have to be reached on the job and require specially tailored courses of instruction. Only distance education can best serve such adults.
6. Distance education effectively combines theoretical studies with practical requirements, thereby avoiding the inherent gap between theory and practice.
7. Distance education is the key means for providing mass adult education in developing countries. Properly adapted to learners, distance education courses can be taken by semi-literates, post-literates and, in combination with other approaches (radio, TV, study groups, etc), by those seeking to learn at advanced levels.

TRENDS IN TANZANIA

Tanzania has set out to build a self-reliant socialist society. One of the most important factors in socialist transformation is education and training for Tanzania's population. This necessitates provision of education and training to more people than can be provided by face-to-face instruction. Since Tanzania's population of about 22 million people is widely scattered, only a small proportion can take continuing education through face-to-face classes. Thousands of people living in the rural areas cannot benefit from educational facilities other than distance education. The need for continuing education through distance education is indicated in Table I.

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* Paper prepared for the 14th International Council for Distance Education (ICDE) World Conference on Developing Distance Education, to be held in Oslo, Norway 10–17 August, 1988. The author is Head of the Correspondence Education Department.

TABLE 1

A STATISTICAL CATEGORISATION OF EDUCATION IN TANZANIA, 1984

Category	Percentage
Primary Education	97.4
Secondary Education	2.1
Teacher Education	0.4
Technical Education	0.04
University Education	0.09

Source: Basic Education Statistics in Tanzania, Ministry of Education, 1985.

This situation has not changed to date. Out of all students who complete primary school (standard seven), only 2 per cent are selected to enter Form One (secondary school). The remaining 98 per cent can only advance their education through distance education. Table 2 illustrates the situation for 1969–1981.

TABLE 2

STUDENTS SELECTED TO JOIN FORM ONE IN TANZANIA, 1969–1981

Year	Number of STD VII students who set for examination	Number of students selected for form one	Percentage selected
1969	60,545	7,149	11.8
1970	64,630	7,530	11.7
1971	70,992	7,740	10.9
1972	87,777	7,955	7.7
1973	106,203	8,165	7.1
1974	119,350	8,472	7.1
1975	135,559	8,680	6.3
1976	156,144	8,659	5.5
1977	169,106	8,706	5.1
1978	185,293	8,720	4.7
1979	193,712	8,908	4.6
1980	212,446	8,913	4.2
1981	357,816	9,178	2.6

Source: Ministry of Education, Annual Report, 1982.

In order to expand education facilities after attaining political independence in 1961, Tanzania needed more qualified, trained teachers, and many teachers who were already in service needed further teacher education. Moreover, Tanzania's shortage of skilled manpower often prevented people from leaving their job for full-time studies. Many face-to-face training courses offered by the government were limited in number and time, and follow-up training related to on-the-job experience was lacking.[3]

Experience demonstrated that distance education could help meet many of Tanzania's needs. Comparative studies carried out in Lebanon an India showed that distance education could be provided at a little more than one-third of the cost of classroom instruction. A comparative study in Tanzania showed the same result. Many Tanzanians were already satisfying their needs in distance education courses which were offered by overseas institutions such as the British Tutorial College. Many of those courses were, however, not designed for Tanzania's educational and training needs. A local Distance Education Institution could provide distance courses written on syllabi designed for national needs and cheaply.[4] Hence the birth of the National Correspondence Institution (NCI) in 1970.

Indigenous distance education in Tanzania started in co-operative training. The Moshi Co-operative College was established in 1963 and began to write distance education courses in 1965 to give prospective students the basic knowledge required to be admitted into the College. The college also prepared distance courses geared at training the village committees and members so that they could understand their duties, responsibilities and rights. The experience of distance co-operative education and training demonstrated that in a large country like Tanzania distance instruction provides relatively cheap means of instruction to cover a bigger student body.[5]

Thus, the NCI was established to provide distance education to Tanzanians wherever they live or work. The aim of the NCI are:

1. To enable Tanzanians to understand the country's policies and development plans so that they can implement them.
2. To contribute to manpower development in the country.
3. To help accelerate national development.
4. To release and disseminate new courses all over the country.

From the outset, the national image of the NCI was apparent. Although it relied on technical aid in finance and skills from the government of Sweden, the NCI was designed to satisfy Tanzanian needs. Thus, all distance courses give instruction for Tanzanian syllabi. The courses are written and produced by Tanzanians. The courses which are specifically prepared for the masses who have little or no formal education are written in Kiswahili, Tanzania's national language. All answers to enquiries, all correspondence with students, and all face-to-interviews are in Kiswahili. All information to the public and to enrolled students is written in Kiswahili. The entire manpower of the NCI is composed of Tanzanians. That is, the department, with 170 employees is managed by Tanzanians. Table 3 shows the courses which the NCI runs.

TABLE 3

DISTANCE EDUCATION COURSES RUN BY THE NCI, 1987

Type of course	Number of courses
Mass courses	5
Secondary Education Level	15
Professional courses	3
Up-grading C–A for Teachers	5
In-service Teacher Training	2
Special Education (Braille for the Blind)	3
Total	33

The levels of these courses are as follows:

1. Introductory courses, equivalent to primary education.
2. Stage One, equivalent to Forms One and Two.
3. Stage Two, equivalent to Forms Three and Four.
4. Stage Three, equivalent to Forms Five and Six.

In line with the objectives of the NCI, the first courses were in Political education (Introductory), Elementary Bookkeeping (to help people in rural areas and towns to keep accurate records and accounts for business management), Accountancy, and Management and Administration (to enable Tanzanians to replace Europeans in managerial positions). Thereafter courses were prepared in Mathematics, English, History and Geography to enable more Tanzanians to sit for the Forms Four and Six National Examinations. The list of courses has been extended to benefit people doing varying occupations as shown in Table 4. Appendix I shows the number of students who have completed NCI Courses.

TABLE 4

OCCUPATIONS OF NCI STUDENTS, 1972–1986

Occupation	No. of students	Percentage
Teachers	16,678	27.4
Peasant-farmers	15,767	25.9
Clerks	7,767	12.8
Soldiers/ Police	5,598	9.2
Students (pure)	4,074	6.7
Artisans	3,692	6.1
Politicians	1,552	2.6
Nurses	1,438	2.4
Religions	813	1.3
Other work	1,615	1.7
Work not known	2,408	4.0
Total	60,802	100.0

Source: NCI Statistics Sub-section.

The student-body pursuing distance education with the NCI is composed of people with different levels of education. As Table 5 illustrates, the NCI serves people from the functional literacy level to those with secondary education. Appendix 2 shows the number of students in each of NCI courses.

TABLE 5

LEVEL OF EDUCATION OF NCI STUDENTS

Level of education	No. of students	Percentage
Functional Literacy	809	1.3
Standard I-IV	4,204	5.8
Standard V-VII	35,123	57.8
Standard VIII	10,720	17.8
Form I-II	2,705	4.4
Form III-IV	5,614	9.2
Not known	1,627	2.7
Total	60,802	100.0

Source: NCI Statistics Sub-section.

Following the implementation of the objectives of the NCI, the 1970 Plan of Operation stipulated that the NCI would introduce a programme of technical training. The preparation of short, simple distance education courses to help the villagers produce better crops and livestock was given top priority in the Plan of Operation. The launching of this programme has been delayed but the NCI is about to complete preparations for initiating vocational distance training courses starting with Trade Test Grade III in Motor Vehicle Mechanics, Electrical Installation, Tailoring, Carpentry, Masonry and Plumbing. More than 3,000 people had applied for these courses by July 1987. The NCI expects to release these courses as soon as printing materials become available and printing itself completed. Appendix 3 illustrates the stages of preparation.

The NCI has contributed significantly to Tanzania's development but faces several problems. First, a lack of printing materials (paper, plates, films and ink); second, some printing machines have long been out of order for lack of spare parts; third, insufficient assistance for training technicians to maintain the printing machines; fourth, distance education technology is not diversified. The solution to these problems depends greatly on foreign assistance since printing materials are not available in Tanzania (except paper, which is too expensive), spare parts must be imported, and technicians trained outside the country.

CONCLUSION

Education is a critical factor in the development of any nation. Distance education is particularly important in developing countries because it serves people who cannot be reached otherwise and it is cheap. Consequently, developing countries should give top priority to distance education in development planning. The development of communication networks should in particular be geared to the improvement of educational technology.

The challenge for distance educators in developing countries is to identify and demonstrate how educational technology such as satellite technology can best be utilised for promoting national development. Many African leaders have expressed the desire to utilise satellites and other appropriate technologies to improve telecommunications services within the African continent, with special emphasis on the rural areas. To this effect, the Regional African Satellite Communications Project (RASCOM) should be managed properly in order to attain its goal. Distance education programs such as those run by the NCI would benefit considerably from this project.

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APPENDIX 1

NUMBER STUDENTS WHO HAVE COMPLETED NCI DISTANCE EDUCATION COURSES 1973–1986

Year	Male	Female	Total
1973	529	16	545
1974	3,147	119	3,266
1975	3,695	183	3,878
1976	3,956	206	4,162
1977	2,781	150	2,931
1978	2,591	192	2,783
1979	2,846	219	3,065
1980	1,416	82	1,498
1981	1,652	127	1,779
1982	1,724	118	1,842
1983	2,098	195	2,293
1984	2,282	205	2,487
1985	2,145	201	2,346
1986	1,549	171	1,720
Total	32,411	2,184	34,595

APPENDIX 2

STUDENTS IN NCI COURSES 1987

Cource	No. of students
1. Mass Courses	22,469
2. Secondary Education Courses (Braille)	34,917
3. Professional Courses	3,056
4. In-service Teacher Training	17,071
5. Up-grading Courses for Teachers	6,303

Source: NCI Statistics Sub-section.

APPENDIX 3

NCI VOCATIONAL DISTANCE TRAINING COURSES
POSITION OF THE PROJECT AS PER AUGUST 1987

Course	Grades	No. units	Written units	Edited units	Illustrations	Final
1. Motor Vehicle Mechanics	III	14	6	6	Under preparation	Nil
2. Electrical Installation	III	14	14	11	"	"
3. Tailoring	III	12	16	12	"	"
4. Carpentry	III	12	8	6	"	"
5. Masonry	III	10	10	10	"	"
6. Plumbing	III	9	9	9	"	"

NB: 1. Average number of pages per unit 32
2. First printing requirement, 3,000 copies per unit
3. Printing materials not available
4. The first 3 courses are to take first priority
5. Total applicants already on list is above 3,000

Some obstacles to implement new information technologies in distance education

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INTRODUCTION

In this paper we will briefly review some pilot projects undertaken to implement or test electronic media in support of distance learning. On the basis of our experience we claim that cost-effectiveness and detailed user analysis have to be considered decisive factors that determine successful implementation.

RECENT EXPERIENCE WITH TELECOMMUNICATIONS-BASED DISTANCE EDUCATION

In a recent OECD publication we can find the following statement:

> ... new (information) technologies themselves provide the best means for coping with training needs; flexibly deployed at home, office, factory and shop; rapidly developed as new needs become apparent; highly adapted to individual learner needs and significantly self paced (Ceri, 1986).

How does this description of the merits of new information technology compare to our experience so far in distance education? Let us comment on some examples in German and British distance education.

One of our first projects at FernUniversität, West Germany, using computer based systems was in the area of student counselling, the so-called *STEB-project*. Students who wanted to enrol had to fill in an additional questionnaire. They then received counselling through a series of different text modules selected according to students response patterns. The aim of the project was to correct wrong expectations thereby reducing later drop-out (Kuffner and Staller, 1978).

The project has not been implemented as a regular component of the universities counselling service for several reasons:

(a) Usefulness to students has been limited. There was no real dialogue. Students could not react immediately to the advice given.
(b) The system was expensive and complicated to run. To keep text modules up to date proved cumbersome. Organizational support was lacking.
(c) Developers of the program were familiar with the handling but this did not apply to the administrative staff who were supposed to carry on the project.
(d) The project did not allow for significant reductions in costs, both on the part of the students or on the part of the university.

Another interesting attempt is the *introduction of videotext* in distance education. High initial expectations are today more down to earth. The fact is that access to interactive videotext is still limited even among our students of informatics (around 1 per cent) (Bartels and Raiser, 1985).

Equally the British Prestel system did not find acceptance as expected among its users (Ceri, 1986). Furthermore the quantity of information channelled through the system posed similar problems to those reported with the student counselling service. It proved unsound to use electronic devices to transmit great amounts of slowly changing textual information. Comparative advantages to print information are given by quick transport of actual information and by feedback facilities. However, quick information retrieval was hampered by cumbersome search procedures. It was interesting to note that students were interested in actual information about correction of course material or examination schedules and in using the library borrowing service.

Students' access to the university mainframe computer via videotext equipment is crucial for the use of videotex especially in the tutoring and teaching environment. There are various options for access, e.g. via PC, videotex equipment or via a study centre terminal. Also different networks can be used. All alternatives vary in fixed and variable costs. The students' choice will depend upon their economic

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situation, their location and their special user interests. In many cases the postal dispatch of disks may suffice without using the interactive videotex system at all. For other purposes a PC at home or study centre connected to mainframe by an electronic modem might be a reasonable and low-cost alternative.

Let us complement the German experience with some of the outcomes of the British *Cyclops project* (Sharples and McConnell; Bacsich, 1982). The idea was to offer tutorials in scarcely populated areas. The equipment used consisted of TV-monitor, light pen, modem, loudspeaker and two telephone lines (sound and data). Up to now the Cyclops system has not been implemented as a regular component of the OU distance learning system. Bates cites four reasons for this (1984):

1. Cyclops was an additional offer to students and therefore increased costs had to be borne by the Open University
2. the Cyclops equipment had been developed by the Open University in co-operation with a manufacturer. The limited scale of this development made the equipment too expensive
3. in order to make use of Cyclops, students had to attend study centres, which is both time consuming and expensive. Study centres are not the best solution to support systems in distance education, compared to learning at home.
4. costs have been shifted from students to the Open University because participation at Cyclops tutorials was free, and students saved travel costs.

These examples, taken from small-scale European distance learning projects, reflect the experience of large-scale telecommunications-based systems in the U.S.A.

The following 30-million dollar *"Learn Alaska Network"* which connected 150 small communities was closed down in 1986. Hershfield (1987) gave the following reason for the failure:

(a) a too small student population to justify the creation and programming of a sophisticated television-based distribution system
(b) far too small an investment in program development for the special needs of the audience.

In 1987 only the audio conference system is still in use.

Another very well known project is the *National Technological University*. Twenty-two universities offer their courses through the system (Baldwin, 1986). The National Technological University uses a satellite-based delivery system to connect 50 receiving sites. Actually the system cannot be regarded as cost-effective. The number of students enrolled is very small (800 in 1986). In comparison to the earlier established video delivery system the only advantage at present is the participation of the remote learner through audio talk-back facilities. However, a "teleclass" size of 50 participants on the spot obviously impedes frequent interaction with the remote learner.

LESSONS FROM EXPERIENCE

Some of the critical issues found in the very diverse projects are (Laaser, 1987) listed below.

(a) Advantages claimed in favour of new information technologies are often almost identical to those which are characteristics of any distance learning system, even those which only use printed materials. This disregards the necessary co-existence and merits of different media-mixes for enhancement of learning and ease of study by a wide variety of students.
(b) Development has been directed more towards acquisition of equipment, mostly at greatly subsidised cost. Software development, organizational infrastructure and man-power requirements are often regarded as of minor importance.
(c) Subsidising development, equipment and transmission costs in the investment phase can lead to preference towards choice of capital intensive technologies, which underestimates later recurrent costs. A similar phenomenon is well known from development aid projects leading to under-utilization of capacity and the closing down of expensive projects. The fact that school computers in the U.S.A. are only used for 10 to 13 hours a week is striking (Ceri, 1986).
(d) Forecasts about the spread of equipment among users and the access to relevant public networks were over-optimistic (e.g. the use of "Videotex" in Germany and the UK). Hardware prices and transmission costs will probably not decrease at the same rate as they did in the past, even if they decrease at all.
(e) System design did not take sufficient advantage of already existing user experience; nor did it benefit from analysis of the user interests in advance of establishment of systems.
(f) The pedagogic potential of new information technologies to attempt to make learning a more efficient process is mostly under-utilised (e.g. interactivity, independence, creativity, active involvement of the learner, easy data collection and analysis, easy text organisation, audiovisual representation (Ceri, 1986).
(g) Existing restrictions to the greater use of new information technologies are not analysed closely enough.

Many experimental projects were not continued after the external subsidies ceased. This indicates that cost-efficiency has not been one of the objectives of these projects. On the other hand, it is clear that introduction of new information technologies is controlled by clearly expressed costs considerations.

In distance learning computer marked assignments were introduced in order to reduce the cost of personal tutors who would otherwise have to mark the assignments. Use of mainframe computers found ample application in tasks such as student enrolment, record keeping, dispatch and other data collection. The advantages were rapid and easy storage, processing and retrieval of large quantities of data and information. The next step was to provide electronic storage and revision of correspondence texts which was intended to reduce secretarial staff and ease the updating of course material. One may therefore expect that telecommunications-based technologies be implemented in the teaching, tutoring and monitoring environment only if they provide cost-effective solutions in comparison to traditional technologies. Unfortunately, as the recent OECD study puts it, costing is one of the areas where lack of data is particularly apparent (Ceri, 1986), though costs are just one aspect of the situation.

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A comparison of the motivation of adult and distance students at the University of Windsor

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INTRODUCTION

The University of Windsor has a long history of offering evening off-campus, and industry based courses for adult students. In 1984 an extensive study assessed the motivational needs of adult students enrolled in the university's programs.

Also in 1984, a distance education program was undertaken, using telecourses available on local broadcast. Distance students and other adult students are similar in many ways. Their time is not primarily occupied in their studies. They are young to middle-aged adults, mostly employed, or at home looking after young families, and usually have severe demands on their time. A study of distance students enrolled in the fall of 1985 was undertaken to determine their motivation and to assess the value of the media used, student contact strategies and support services.

This paper will summarize the results of the first study, detail the results of the study of distance students and compare the conclusions.

1984 STUDY COMPARISON

The 1984 and 1985 studies used similar data collection instruments and statistical analysis techniques. Therefore a comparison of the results is valid and meaningful.

INTERNAL MOTIVATION

The 1984 study reported three primary internal or psychological factors motivating the part-time university student:

(a) to provide a change in patterns of social interaction.
(b) to provide for a change in life patterns of status and social recognition; and
(c) to release the tension arising from the conflict between social freedom and duty and responsibility.

The 1985 study concludes that the distance education student is motivated by three factors:

(a) to find opportunities for intellectual growth and recognition of achievement;
(b) to provide new patterns of interaction with personal and professional associates; and
(c) to provide a change in living patterns by abandoning old undesirable habits.

EXTERNAL MOTIVATION

The 1984 study reported the existence of two external or environmental factors motivating the part-time student.

(a) The professor is perceived to be at the centre of the learning environment and a key element in the motivation of the student, and
(b) Other students help create a motivating environment by the active social interaction that results from their getting together regularly.

The 1985 study results are consistent with the 1984 results in that a primary motivating factor is the need to change one's relationships. The part-time student can achieve this by going to a new place to be with new and different people. The telecourse student can meet this need by stepping into a mediated learning environment. In the 1984 study, students were successful in changing their patterns of social interaction. The telecourse student expressed a need for such a change but could not achieve it.

The 1984 study identified the need for social recognition and status. This was manifested in a desire to improve the employment situation. The 1985 telecourse student expresses a similar need but described it not in terms of promotion or job change, but in intellectual growth and recognition of achievement. The university has the power to give such recognition and, for the telecourse student, this appears to suffice.

LEARNING ENVIRONMENT

The 1984 study reported that part-time students perceived the learning environment to have three primary dimensions: the professor at the centre, the interaction with fellow students and the accessibility of the university's learning resources — computer, library, media centre, etc. The 1985 study indicated that, although the telecourse student did not have the same access to the professor or other students or the university's learning resources, the need was still expressed even though it was unmet. The dimensions of the learning environment for the telecourse student are perceived to be the quality of print and non-print materials, the relevancy of the content and the quality of assignments. Meeting with the professor is not a significant element in the motivation of the telecourse student. More important is the need to have access to the university's learning resources.

DISCUSSION AND CONCLUSIONS

The analysis and comparison of the two studies indicate the elements which motivate University of Windsor distance students, the subject of the first research question.

The conclusions drawn from the 1984 study were five in number:

1 A program of study for distance learners should provide the opportunity for a change in the student's pattern of social interaction.

This conclusion is appropriate for the 1985 study. The telecourse student expresses a need for change in life routine.

2 The courses of instruction provided should be selected to support the career aspirations of the student.

This conclusion must be modified in light of the results of the 1985 study. Intellectual growth and recognition rank high with the telecourse student, suggesting a broader range of course offerings not limited to career goals.

3 The distance learning program should provide the student with ease of access to professors, tutors and counsellors.

The 1985 study results would modify this recommendation. The telecourse students perceive a need for access to tutors and counsellors. Access to the professor does not rank as high as it did for the part-time student.

4 Distance learning course content should consist of complete packages of high quality independent study instructional materials.

The 1985 study results would rank this recommendation at the top of the list. Instructional materials are at the centre of the telecourse students' learning environment.

5 The distance learner should have access to all of the instructional and recreational resources available to regular university students.

Although impractical, this recommendation does reflect a need expressed by the telecourse student. The implementation of such a recommendation may be possible not in terms of the traditional meaning of access, i.e., physical or in person access to places and people, but through the use of communication technology. It may be possible to meet this need through teleconferencing, computer networking and audio and video cassette exchanges, thus permitting the telecourse student to interact with the university community and to access its learning resources. This recommendation is then applicable using media technologies to give access to the telecourse student.

In conclusion, the results of the 1985 study support the earlier research project. The 1984 study made projections for distance learning students based on research into the motivation of part-time students. The 1985 study had as its subjects telecourse students who may be more specifically defined as distance learning students. The assumptions of the 1984 study have been tested by the 1985 project and have been confirmed and the conclusions and recommendations, with minor modifications, continued to be valid.

The research has shown that University of Windsor students in distance courses are motivated by:

1) a need for intellectual growth and recognition
2) a desire for change in their habits and patterns of social interaction

Distance students also desire assistance with their studies. In order to receive this help, students wish access to

1) tutors and counsellors
2) high quality instructional materials
3) other institutional resources

The research demonstrates that career development is not paramount for these students but they have other motivational needs which should be addressed. It appears that an educational structure based on technology alone will be insufficient to satisfy students needs in distance education.

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Distance education for liberal arts learning: The University of Wisconsin — Green Bay Extended Degree Experience

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Over the years it has become clear that completion of secondary education and/or technical education is no longer sufficient due to changing life styles, job requirements, and ever increasing technological developments. For example, many technological changes are coming at such speeds that the notion of a "half life" of a technical degree is becoming common place (Hartoonian and Laughlin, 1986). Specialized knowledge may become obsolete in less than four years which often results in the need for retraining or technological unemployment.

The purpose of many distant education programs is to allow adults to continue with their employment and other obligations and to work for a college degree or to learn new subject content for personal growth. Universities in many parts of the world have created extended or external degree programs to meet the needs of adult learners who may experience geographic, social, cultural, or urban isolation. These programs enable adults who were or are unable to attend conventional university programs to gain access to higher education. (See earlier studies by Medsker, Edelstein, Kreplin, Ruyle, and Shea, 1975).

This paper explores one such program for adult learners at the University of Wisconsin–Green Bay (hereafter identified as UWGB). This Extended Degree program is designed to meet the needs of adults who live any place in the state and who want to continue to learn and earn a college degree but already have numerous other obligations — personal, family, professional, civic and social.

This program offers those who complete the required course of study an undergraduate bachelor's degree in "general studies". The interdisciplinary competency based curriculum is somewhat prescriptive in that students are required to complete coursework in each of the following areas, and in an area of emphasis. These requirements are business and economics (9 credits), communications (6 credits), humanities and fine arts (9 credits), natural sciences (9 credits), social sciences (9 credits), problem solving (4 credits), and complete an adult learning seminar (2 credits). In addition, there are 61 credits of elective courses which include any acceptable college level course.

The Extended Degree Program Requirements are illustrated in the graph which follows.

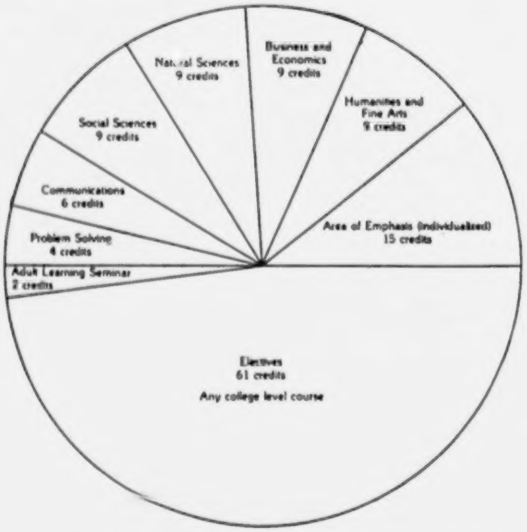

Illustration 1: Requirements in the UWGB Extended Degree Program.

In order to meet the needs of the adult learner and to ensure a quality program, it was necessary for UWGB to find ways to offer adequate learner access to faculty and other university resources, such as learning and reference materials. In this respect the university librarians have been most helpful in securing needed resources for faculty and students. A learning contract specifies the student's obligations with regard to learning outcomes.

The overall general goals of the UWGB Extended Degree Program are as follows:

a) To offer a General Studies degree program for students who wish to work toward the development of competencies which prepare the individual to participate effectively in the family, occupational, and community contexts.
b) To make available a baccalaureate degree program to individuals who find it difficult to meet standard university residency requirements.
c) To give mature students an opportunity to play a large role in the development of their academic program.
d) To provide an alternative approach to education for individuals who find traditional learning contexts unsuitable.
e) To offer a number of tracks within the basic General Studies format so that students may emphasize clusters of competencies which fit their needs or interests.
f) To give credit to students who have had academically-creditable prior experience or training.

The pedagogical objectives are expected

a) To develop college-level proficiency in communication skills – numerical, writing, reading, speaking, and listening.
b) To develop knowledge and skills for making the value judgments and factual decisions necessary for living in contemporary society.
c) To enhance the ability to function effectively with individuals and groups.
d) To equip each student with basic knowledge of the concepts and skills in major disciplinary areas.
e) To permit emphasis in one or more disciplinary or multi-disciplinary areas which fit the students' needs and interests.
f) To develop the foundation for self-directed, lifelong learning (UWGB: 1984, p. 1)

In the program at UWGB students meet with the course instructor face to face at least twice during the course. These 3 hour seminars have several objectives. At the first meeting the students receive a fairly detailed sequenced course syllabus, a study guide which describes the required readings and writing assignments, suggests various approaches of study, and specifies clearly defined learning outcomes. This implies systematic preplanning on the part of the instructor, a knowledge of the discipline, and an understanding of adult learning theory. After this meeting the learners work independently and/or with assistance from the course instructor via a telephone conference call or by correspondence through the mails at the discretion of the student. A sense of excitement for learning needs to be made evident to the student.

At least one more time during the course the learner and instructor meet in person to review completed assignments, to explain future lessons, to discuss problems or concerns, and/or exchange ideas and perspectives. This feedback is critical so that learners may experience success and/or satisfaction in the course. The two meetings are the only direct person-to-person contact between learners and instructors. They let the learners come to the campus and get a feel for the university, use the library resources, browse in the book store, and interact with other students in the extended degree program, and take part in other campus activities.

High quality materials complement the instructional expertise of the instructor and compensate for the limited learner-instructor face-to-face contact. The instructional materials take the place of the traditional classroom lecture and help students understand course objectives and faculty expectations, the organization of the course, and ways to learn the course content. Individual course materials within the program may include textbooks and other assigned readings, study guides, as well as audio and video tapes. This enables students to have some control over the pace of their learning. Learning is a personal affair and there is not necessarily a connection between instruction and learning.

Who are the adult learners in the UWGB Extended Degree Program? A recent survey of students enrolled in the program revealed that nearly 60% of the learners live more than 50 miles from Green Bay. Some learners live at least 160 miles to the southwest (Richland Center) and some 185 miles west (Eau Claire). This means that it takes between one and three and a half hours driving time one way to travel to Green Bay for the required on-campus meetings. The learners are primairly jobholders (88%) with the majority employed in professional or managerial positions. The learners are approximately equally divided between females and males. Learner age ranges are from 22–72 years old with the average age being 37 years old. Nearly one-third indicate an interest in pursuing graduate work after completing their undergraduate degree program.

Since July 1978 when the program began with 67 students, the UWGB Extended Degree Program has served over 1000 students. The enrollment during 1986–87 was nearly 500 students. Some extended degree students may decide to enroll for regular classes at UWGB or at other 2 or 4 year campus of the University of Wisconsin System. To date 39 students have graduated from the program. They completed the program in about five years. Some student have only enrolled for specific courses which met their immediate needs and goals. Nearly to-fifths of these enrolled receive financial support from their employers to cover expenses related to earning the degree.

Student evaluations are very positive. The followingchart indicates their degree of satisfaction with the program.

Chart 1: Satisfaction for the UWGB Extended Degree Program

Area Satisfaction	Percentages
Sufficient time to complete learning activities	96 %
Professors available and responsive to needs	86 %
Contracts provide opportunity to acquire learning skills transferable to other academic or life activities	92 %
Contracts designed to motivate completion of study	91 %
Satisfaction with method used to evaluate completed work	92 %
Mastered content and/or skills employed in area of study	97 %
Learning outcomes (competencies are relevant and important in their own development)	91 %
Appreciate new perspectives	91 %
Broadened their outlook	90 %
Gained an understanding of social issues	90 %

Students report insufficient involvement with other students (51%) but recognize this as a characteristic of an extended degree program. They also indicate they have enrolled in the program because of their need to work independently (UWGB; 1984, p. 20). Extended degree students are self-directed and able to establish priorities for studying, but at the same time they retain a sense of balance in their lives.

The UWGB Extended Degree Program is alive and well. Future growth of the program is anticipated. The program serves the needs of those who enroll and is likely to be expanded in terms of courses and format.

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Attitudes of external faculty towards distance education

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DISTANCE EDUCATION: THE CONCEPT

Distance Education refers to the teaching and the learning process where a space and time dimension intervenes between teaching and learning. Distance education, however, is a relative term that, in fact, updates the term, "correspondence education" which has been used in many countries for over a century. In practice distance education usually involves a combination of media to achieve the desired result. Distance educators have found this use of media to be efficient and effective in handling both small and large groups of learners. The media used in distance education are generally backed up by correspondence lessons and face-to-face sessions. The advent of mass media and the emerging role of communications have proved that education need no longer be limited to classroom face-to-face learning. For this distance education programmes should be flexible in response to market demands, such as continuing professional education, employment oriented education, non-traditional need-based education etc.

NEED FOR DISTANCE EDUCATION

Traditional methods of education are now inadequate. The formal system is no longer the sole influence on people's social attitudes. Mass media such as radio, TV and films play a major role with their advantage of wide reach and low cost. The decline in the quality of traditional education despite an increase in its dissemination can be minimised through the mass media which respond quickly to the varying needs of people. The demands for formal institutions has out-stripped the capacity of many economies to supply them. Alongside this, technological changes in science, medicine, agriculture and engineering offer new opportunities to many adults, if only they had the relevant education. The scale of the double demand for schools and adult education has led to a search for alternative methods of education that can reach a vast and diverse population in remote rural areas at a lower cost. Thus the developing countries have found distance education to be the answer to the problem of taking education to the geographically isolated population. Equally, developed countries need distance education for people who cannot attend on-campus classes.

DISTANCE EDUCATION IN INDIA

India made an early start in distance education by using Radio in schools in the early 1950s to supplement the regular curriculum. TV was used in New Delhi to support classroom teaching in selected subjects in 1975–76. India launched the Satellite Instructional Television Experiment (SITE) to broadcast self-contained serial lessons for all viewers in the 6 to 11 years age range. Of the two and a half hours set aside for education every day the morning telecast was used for primary education. The programmes were motivational and not strictly syllabus oriented.

At the secondary level distance education started formally in 1965, through the launching of correspondence courses. Printed materials remained the main form of instruction in these courses. Distance education at the tertiary level started with the introduction of correspondence courses at Delhi University in 1962, in response to the increasing demand for college and university education. Other universities followed suit and today about 35 universities offer correspondence courses at graduation and post-graduate levels. Distance teaching is carried out mainly through printed materials and face-to-face contact seminars, though very few universities have started using radio, TV and audio-visual cassettes.

The first open university in India was established in Andhra Pradesh during 1982. There are now five open universities offering graduate, post-graduate and diploma courses.

The four regional colleges of education have been conducting summer school cum correspondence courses for the in-service training of teachers since 1966, through a combination of correspondence instruction with two-months summer sessions of intensive instruction on-campus and practice teaching. Thus distance education has proved its effectiveness by providing educational opportunities for the geographically and socially isolated and for disadvantaged groups. Women are an important target group and distance education has a special relevance for them. Topics which are appropriate for women, such as skill training, can be brought into their homes through distance training.

Some educators who have not been exposed to distance education use the physical distance factor to devalue distance mode as a second rate method for second chance, lonely and isolated learners though the curriculum content and the method of evaluation are the same for both the systems. Many teachers in distance education institutes feel that they are deprived of their traditional status by not being in control of a classroom. But they accept that the experience gained by teaching distance learners leads to professional development. The growth scenario should not conceal the continuing existence of additional problems. This sample study attempts to measure the attitude of the faculty of the Institute of Correspondence Education of the University of Madras towards external study.

BACKGROUND

The Institute of Correspondence Education, University of Madras, was started in 1981–1982, offering graduate and post-graduate courses in History, Political science, Commerce, Public Administration, Economics, Tamil and English Literature. Out of a total enrolment of 2.25 lakhs students at the 26 universities in India offering distance education courses, the University of Madras accounts for about 17 per cent, ranking third largest in the country. Also, the institute accounts for 50 per cent of the 1.38 lakhs of distance learners in the State of Tamilnadu. The pattern of enrolment in 1981–1984 is shown in Table 1.

Table 1: Pattern of enrolment in 1981–84 at University of Madras

Sample no.	Year	Level	Enrolment
1.	1981-82	undergraduate and postgraduate	17,008
2.	1982-83	undergraduate and postgraduate	11,408
3.	1983-84	undergraduate and postgraduate	17,990

In spite of the number of problems the institute is faced with, the trend of enrolment seems to be increasing, due to the demand for higher education. Teaching is carried out primarily through printed material, supplemented by personal contact programmes in selected centres. The institute has a number of core teaching faculty, and many external faculty are also invited to teach contact seminars. This study aims to find out the perception/attitudes of the faculty towards external study in general, and the institute's programme, in particular.

Procedures: A preliminary informal interview was held with half a dozen faculty of the institute and based on the interview, a questionnaire was developed to gauge the attitude of academic staff towards the various academic aspects of distance education. It was also expected that the results of this survey would:

a) Identify the strong and weak points of the present model and the aspects that need modification
b) enable recommendations to be made to the concerned authorities for the improvement of the system
c) indicate areas that need staff development programmes.

The questionnaire focused its attention mainly on the process of teaching. The sample consisted of 50 members of staff selected at random from those who are currently involved in teaching distance learners. The questionnaire with 12 questions was distributed by the investigator during the contact seminar and the completed questionnaire was collected later, at their convenience. Table 2 indicates the frequency of responses for each item.

DISCUSSION

Question 1 and 2 It is encouraging to note that only 10 per cent of the respondents indicated that they would avoid teaching distance students if they could. This counters the general opinion that the traditional teaching system is preferred. Most of the staff have been deputed from the traditional system and they expressed an interest and willingness to continue in distance teaching. Only 13 per cent prefer teaching regular students.

Questions 3, 4 and 8 Of the respondents 40 per cent found teaching regular students easier and less strenuous, 62 per cent said that the seminar classes were overcrowded and only 11 per cent felt that they are better satisfied while teaching regular students. Usually the seminar classes are held in places which lack proper seating arrangements, accommodation, ventilation, lighting, microphone facilities etc. Where attendance is compulsory classes will be overcrowded. Naturally, there is more satisfaction when the teacher-student ratio is less and each student gets individual attention.

Questions 6, 9 and 10 As experienced, working, responsible adults, distance students are in general self-motivated. But 28 per cent of the sample found the distance students less motivated than regular

Table 2: *Questionnaire*
(SA: Strongly Agreed, A: Agreed, UD: Undecided, D: Disagreed and SD: Strongly Disagreed)

		SA	*A*	*UD*	*D*	*SD*	*Total*
1	*I would avoid teaching distance education students, if I could*	2	3	1	18	26	50
2	*I prefer teaching regular students instead of distance education*	5	8	2	15	20	50
3	*It is easier and less strenuous to teach regular students than distance education students*	5	15	2	20	8	50
4	*I get better satisfaction when I teach regular students*	2	9	4	24	12	50
5	*Teaching distance education students lacks status*	1	5	0	21	23	50
6	*Distance education students are not as interested as the regular ones*	4	10	1	17	18	50
7	*The support services to the distance students are quite inadequate*	14	27	4	3	2	50
8	*The contact seminar classes are usually overcrowded*	13	18	4	10	5	50
9	*It is difficult to maintain discipline in contact seminar classes*	5	18	2	20	5	50
10	*There is no student participation during contact seminar*	8	22	5	13	2	50
11	*I do not like marking assignments*	6	14	2	20	8	50
12	*Distance educators need orientation and training to teach distance students*	12	20	5	5	8	50
13	*Which of the following have you made use of, in your distance education system?* *(a) Printed lessons; (b) Face-to-face teaching; (c) Radio; (d) Audio-tapes; (e) TV; (f) Video-tapes; (g) Any other.*						

ones. The students were probably either unemployed and rather frustrated or overworked due to pressing problems. Due to overcrowding and the diversity of the students the seminar classes lack the type of balanced participation found in the regular classes. The glaring difference in age, educational qualifications, experience, level of understanding and articulation makes interaction difficult. As the group is large, seminar classes short and the syllabus vast, individuals do not always get an opportunity to participate (60 per cent) in any discussion and if they try to it becomes difficult to control and maintain discipline (46 per cent).

Questions 5 and 7 These items examine the perception of the staff of a system which caters to the needs of a vast population. Though current orthodoxy holds that teaching distance students lacks status, the responses are fairly encouraging, for most of the respondents consider both systems equal. But in many instances, the degree obtained through external study is considered second rate compared to its traditional counterpart.

Questions 7 and 13 It must be of concern that 82 per cent of the respondents pointed out that the support services for distance students are inadequate. Apart from printed lessons and face-to-face contact seminars, no other media are involved. Only a handful of institutions use radio and audio-tapes; UGC telecasts programmes for college students; and Madras Dhoordharshan supplements school teaching through its telecasts at school level. There is no proper evaluation to see whether programmes reach their target population.

In this age of sophisticated mass media and satellite communication there is an urgent need to make optimum use of all the appropriate and accessible support services.

Questions 11 and 12 Of the teachers 40 per cent did not like marking assignments or response sheets as it is a time consuming, monotonous and unrewarding job. 60 per cent of the respondents wanted teachers to be properly trained in the areas of sustained interest, teaching methods, using a variety of media, maintenance of discipline, and evaluation before facing the heterogeneous, motivated adult distance learners.

CONCLUSION

Self-motivated, adult distance learners are effective and efficient only if flexible and varied processes, quality products and skilled instruction are provided through a variety of approaches and media. Distance educators do not lose their status or importance due to their new role and their new relationship with the learners. Learning is interactive and sociable but learners should be allowed to work on their own. Flexible, non-formal education cannot be confined to place, time and method determined by teachers alone. The needs of adults are entirely different from those of children and educators who are not sensitive to these needs lack proper attitudes and hence feel uncomfortable. Hence the faculty need and in-service staff development programmes in innovative and creative techniques of teaching and in providing academic and vocational counselling. Professional development of teachers is a continuous process.

Through modest fees and a flexible course credit system, education can be delivered at a minimal cost.

Basic knowledge as well as advances in health, family welfare, nutrition and agriculture can be effectively communicated through distance education. The evening programmes on agriculture, health and family welfare and the morning school broadcast under the SITE programme were well received by the target audience, and people preferred information to entertainment through the media.

Recruitment of teachers requires careful thought. There should not be any disparity between the service conditions, salary structure and status of teachers in university departments, and institutes of distance education.

Distance education can increase student enrolment, improve the use of available resources and modify the teacher's role provided the teacher's attitude towards external study is favorable and positive.

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Managing student services for mastery learning

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Today in some universities students are at a great transactional distance although they attend classes regularly. The students merely go through the process of taking notes in a face-to-face environment which provides neither dialogue nor structure to meet their individual educational needs. By contrast, in a system of education described in ancient Indian literature[1], more than 5000 years old, the students were at a lesser transactional distance. The English translation of a Sanskrit verse describing this system is:

Learn one-fourth from the teacher,
one fourth by self-study,
one-fourth from fellow pupils, and
one-fourth while applying knowledge from time to time.

Most students lived in schools called "Gurukuls" where the teaher catered to their individual needs. The interactions among peers and senior students provided the much desired "dialogue". In addition, the learner interacted with the society and his knowledge increased as he gained more and more experience.

Based on the results of modern research in educational technology, and taking cues from the above verse, an Individually Guided System of Instruction (IGSI) has been developed.[2]

DESCRIPTION OF IGSI

In IGSI the course material is split into short units such that one unit can be covered in six to eight periods of fifty minutes duration. The teacher spends up to two periods introducing the unit and explaining difficult terms, concepts, derivations etc., showing models, films, charts etc. and giving practical demonstrations as needed. The student is given a study guide which contains an introduction to the unit to arouse interest and to link the present unit to previous and future units, behavioral objectives for the unit, suggested procedures for achieving these objectives, activities, assignments and self assessment. In the skeleton study guides the student is instructed to read pages of different books. On the other hand the self-contained study guides incorporate the entire study material.

The student studies on his own with the help of a study guide and tries to finish the unit before the date for the introduction of the next unit. When the student encounters any difficulty, he gets help from a tutor on an individual basis. For every six students there is a senior student who tutors on a volunteer basis. Only the better senior students who volunteer are involved as tutors in the IGSI class. In some institutions credits can be awarded for tutoring. This encourages senior students to tutor their juniors. In the beginning of the IGSI course the teacher explains the system to tutors and gives hints for tutoring and grading of tests. Specifically, the tutors are advised not to solve a complete problem for the students but to give hints and guidance so that they are able to solve the problem by their own efforts.

In the IGSI course the student learns to take the initiative in self-learning activity. With the help of the tutor the student learns through the unit, works out the assignment and takes the self assessment to verify achievement of the objectives. After covering the entire unit the student asks the tutor for a mastery test which is graded by the tutor in his presence. The evaluation is both written and oral. The mastery tests are used for diagnosis and also to determine attainment of a pre-determined level of mastery. If the mastery level is achieved the pupil is allowed to go to the next unit, otherwise he is given a prescription for futher study (Fig. 1). After more preparation the student takes another test on the same unit. This process is repeated until the pupil demonstrates mastery of the unit. The student is encouraged to finish a unit before the teacher introduces the next unit on a pre-announced date but no formal deadlines are imposed. Thus, pupils are allowed to progress at their own pace using guidance when desired. This is why we have named this system the Individually Guided System of Instruction (IGSI).

The IGSI requires the presence of a teacher who for part of the time also assumes the role of a learning facilitator. Both teacher and tutors provide personalised help to each student. But most of the teacher's time is spent on the development of course material supervision of tutors.

As the students progress to higher levels a greater proportion of learning takes place in the absence of a teacher. Most distance education systems consider the student basically individual. Several other mastery learning systems have been developed which are completely individualised and no formal lectures are given.[3, 4]

The design of a distance education system today is premised on the separation of teacher and student. Therefore, in this system the role of the teacher and the nature of his transactions with the learner are much different. The students can be taken to a high level of mastery in the absence of a teacher by providing strong student support services. This support will then not be supplementary, but will be an integral part of the educational programme. This implies that an institution may decline to accept some eligible students on the grounds that it is unable to provide them with a suitable study programme backed by extensive student support. The distance education institutions which do not provide support services to their students may not be able to provide mastery learning to any of their students.

Mastery learning requires an institution to use its capacity to provide student support services to its fullest extent. Student support includes study material and assessment feedback, communication with students by telephone, letter or electronic mail; face-to-face tutorial help at study centres, tutorials by telephone or satellite etc. Networking and electronic mail technologies have considerable potential for improving the quality of tutorial and student contacts in distance education. Using feedback from the computer on computer marked assignments also would make the work of the tutor easy. But in the mastery learning systems described above, good print material and regular help from a tutor are all that is required. The tutor is the major provider of support. The tutor's role is to reinforce learners' efforts to master the objectives in the study guide using the material given in the self contained units. The other student support would make it easier for the students to attain the mastery level. The objective of management is to provide tutors and to supervise their work.

In most distance education institutions, it may not be possible to provide support to all students using the institution's tutors. This is possible only in small enrolment courses where the students are local. Usually the tutors will be in the regions and hired locally. These distant tutors have to be supervised properly. Supervision can be done by visiting the tutors and observing how they conduct face-to-face sessions and what kind of relationship they are able to develop with students. Marking can be checked for quality on a random sampling basis. It is desirable to hold a training programme for tutors at the beginning of the year to acquaint them with the new system and to provide advice on good tutoring and marking, the organisation of course material, checking the progress of students etc.

The foremost objective of a distance education system is to democratise educational opportunities. To democratise educational achievement by mastery learning, strong student support needs to be provided. The best interactive support that can be provided to students is face-to-face tuition. This interaction can be provided by tutors who are not necessarily lecturers or persons having high professional ranks. Even senior students who have recently taken a similar course can provide effective tutorial help. Volunteers and other community social workers could also provide such help. This makes learning co-operative and more enjoyable without increasing its cost. In countries where human resources are abundant, distance education systems can provide high quality education by proper operations management. The proper provision of human resources alone can make distance education systems succeed in providing high quality education.

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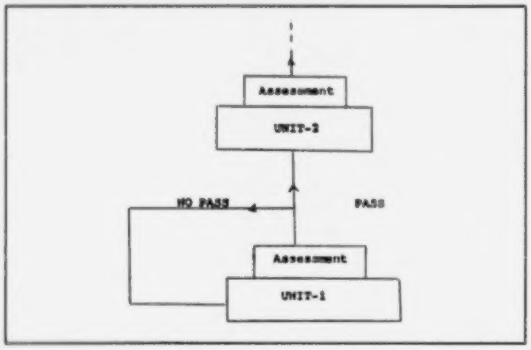

Fig. 1. Showing reinforcement used in mastery learning systems. The grades given in mastery assessments are PASS — for demonstrating mastery, and NO PASS — for achieving a level less than mastery. Students who get a NO PASS repeat the unit, while the students who get a PASS go on to the next unit.

Designing and writing distance education materials for basic education and development training programmes: the Kenyan experience

B. MATIRU and D. GACHUHI

INTRODUCTION

Most African governments, in the two decades following their independence, have attempted to provide formal education for manpower development. However, due to the tremendous demand for education, this could not be done through the formal school system alone. Distance education has become the most reliable alternative in meeting this need. Kenya is no exception to this trend. This is reflected in the increasing number of government sponsored distance education programmes.

Programmes offered by the College of Adult and Distance Education (CADE) of the University of Nairobi, now enrol over 12,000 students who are studying basic education and training courses. In order to meet the demand for higher education, CADE also offers an external degree programme.

Other government institutions such as the Kenya Institute of Special Education, the Co-operative College of Kenya, the Kenya Institute of Education, Tom Mboya Labour College and Moi Polytechnic also offer courses at a distance. In addition, some non-governmental and international organizations, including the African Medical Research Foundation, the Hadley School for the Blind and the African Institute for Economic and Social Development, have ventured into this field. The demand for such courses is increasing every year.

The major reason for the growth of distance education in Kenya is the fact that the formal education system is unable to cater for the great number of learners who want to further their education. This is so especially in the areas of teacher training and up-grading, secondary education and business studies.

THE NEED FOR TRAINING DISTANCE EDUCATORS

The German Foundation for International Development (DSE), over the years, has sought to provide assistance to education programmes in East Africa and other countries in the region, by way of training professional personnel in basic education, literacy and development. DSE, therefore, found it appropriate to develop a training package, in collaboration with CADE, to train writers of distance education materials. The package was to consist of a series of two-week workshops.

The implementation of the series began in March 1985, with DSE providing financial assistance and external consultants and CADE providing local resource persons and support services. This co-operation which was to last for three years, has now completed three training cycles.

The 1985–1987 workshop series had the following main objectives:

(a) to bring together writers of distance education materials from formal and non-formal development training programmes to share their experiences and learn together;
(b) to build a core of experienced designers and writers of distance education materials who would disseminate their skills throughout East Africa;
(c) to familiarize course writers with what is involved in a distance education system;
(d) to equip course writers with the necessary skills to design a specific correspondence course;
(e) to have course writers plan, develop and write a unit for a specific course.

The workshop series had external as well as local facilitators, all of whom gave inputs, led group discussions and chaired plenary sessions. They also advised the writers individually on the development of their materials during and after workshops. In addition to working with the writers, the local facilitators also met with heads of institutions to discuss institutional support for the workshops.

THE TRAINING MODEL USED AT THE WORKSHOPS

The training model used for designing and writing distance education materials consisted of three stages.

Stage 1
The first stage consisted of a two week training workshop at the beginning of the year (March/April). During these two weeks the participants were informed on how to design a distance education unit and what is involved in writing such a unit. They completed a detailed topic outline for their unit, including the writing of unit objectives. The participants were guided on how to write the unit and completed part of it at this workshop. After the workshop, they returned to their institutions and completed the rest of the unit.

Stage 2
During this stage participants were back in their institutions and wrote the rest of the unit they designed and outlined in Stage 1. They sent their draft to the facilitators for comments. Facilitators visited as many participants as possible. All units were pre-tested during this stage.

Moreover, at the end of this stage (5 to 6 months) the units were typed and duplicated in adequate numbers for peer review and sharing. In addition, suggestions were made for illustrations and the units were ready for detailed editing.

Stage 3
After six months, the participants came together again for another workshop of two weeks to present their units and to have them commented on by the other participants and facilitators. Each participant had a unit edited by a group and re-wrote it for final typing. All illustrations were planned, drawn and inked in. When the participants returned to their institutions, their units were ready for copy editing and printing.

WORKSHOP METHODS AND PROCEDURES

The participants were involved in negotiating some of the objectives and procedures of the workshops. Questions of areas of emphasis, treatment, sequence and application were decided only after the participants had met to discuss the purpose and procedures of the workshops.

The core of the workshops was seen as a guided practicum in which the participants designed and drafted one distance education unit and wrote the detailed text.

Lectures, discussion groups, and individual consultancies were used to explain concepts, teach and reinforce skills and techniques and introduce the tasks of the practicum. Moreover, participants were encouraged to share their experiences and written materials with their colleagues and the faculty during plenary sessions.

The workshops were evaluated on a daily basis by the participants. They also completed a more comprehensive questionnaire which was analyzed and the results discussed in plenary before the end of the workshops.

Basic documentation for the workshops was provided by DSE. This included manuals on writing and editing as well as texts on the theories of distance education.

In addition to these, a specialized collection of reference books, textbooks and monographs on the subject of distance education was brought to the workshops for reference and use by the participants. They also came to the workshops with all the reference materials they needed to write the subject content of their course.

TRAINING CONTENT OF THE WORKSHOPS

The following topics constituted the main inputs in fulfilling the objectives of the workshops:

1. Essential elements of distance education
2. Characteristics and needs of distance learners
3. Course development for distance education:
   a. The process of course development
   b. Selection of instructional methods
4. Course production:
   a. Principles and stages of course writing
   b. Interactive Instruction
   c. Presentation: style, format, language, illustrations
   d. Principles of editing
5. Assessment of learners
6. Tutoring at a distance
7. Testing and Evaluating the course materials.

ACHIEVEMENTS OF THE WORKSHOP SERIES

The workshops series realized major achievements in several areas.

UNITS WRITTEN

The majority of the workshop participants had never undergone an intensive training course in writing. It is therefore a reflection of the success of this workshop series that a total of 66 units of about 45 pages and 23 lessons of about 12 pages each were designed, written and illustrated in the three cycles of the workshops held. Participants undertook to write urgently needed materials for eight different programmes. Some of these materials are already printed and being used by distance education learners.

The following table further summarizes these achievements.

Table 1: Total number of units and lessons designed, written, illustrated and edited

Course	1985	1986	1987	Total
In-Service Course for Primary School Teachers	11	5	7	23
Foundations Course for Adult Education Teachers	5	4	10	19
Co-operative Knowledge	6	2	3	11
Health Learning Materials	15	8	1	24
Special Education	0	0	3	3
KCE subjects	0	3	1	4
Trade Union History	0	1	0	1
Bridging Courses for Tanzanian Adults	0	2	2	4
Totals	37	25	27	89

ILLUSTRATING THE UNITS

The production of these units would not have been complete without graphics. There were continuous consultations between each writer and the graphics department during which suggestions for the covers, symbols and line drawings were discussed. Writers were shown how to prepare an artist's brief which then became the basis for the artist to use to develop rough sketches. Once these were approved by the writer and his group, the artists prepared the final artwork. The total number of illustrations is shown in Table 2.

Table 2: Completed graphics for the units

Type of graphic	1985	1986	1987
Cover	4	0	5
Symbols	17	2	8
Line drawings	182	244	262

The symbols developed at the workshop were found to be appropriate and have since been accepted for use by many distance education institutions in East Africa.

Although the majority of the writers at the workshops had done a little writing, none had any intensive training on the writing of distance education materials. Moreover 33 out of a total of 66 participants in the two workshop series never wrote any distance education materials before coming to the workshops. It is therefore a major achievement that various institutions in East Africa have 66 well trained writers who also have basic experience in editing. Table 3 shows which institutions have had writers trained in these workshops.

It should be noted that the writers who are working in teacher training colleges and KIE are all writing courses for CADE (14).

Table 3: The number of writers trained for various institutions, 1985–1987

Institution	Number of Writers			
	1985	1986	1987	Total
College of Adult and Distance Education	4	0	6	10
Teachers Colleges	1	3	2	6
Kenya Institute of Education	0	3	5	8
Co-operative College of Kenya	6	2	2	10
AMREF	3	4	0	7
Hadley School for the Blind	0	2	0	2
Tom Mboya Labour College	0	1	0	1
Department of Adult Education	4	4	6	14
National Correspondence Institute (Tanzania)	0	2	2	4
Institute for In-Service Teacher Training (Somalia)	0	0	2	2
Kenya Institute of Special Education	0	0	2	2
Total	18	21	27	66

NEW SKILLS ACQUIRED AT THE WORKSHOP

As a result of all the inputs and practical sessions at the workshops, as well as the experience gained in the interim between workshops, all the writers are able to:

- define the educational needs to be met by their institutions;
- define learner's needs and characteristics;
- identify available resources for a particular distance education course;
- state objectives of the course;
- describe possible alternative methods in order to meet the objectives of the course within the limitations of the resources;
- select the most suitable methods;
- work out the details of the chosen methods in the subject content areas by preparing a content synopsis;
- plan the course format, cover design and illustrations;
- work out the evaluation procedures for the course.

All the participants of these workshops have already applied these skills in the regular course of their duties at their places of work.

ESTABLISHMENT OF A SUPERIOR LIBRARY

As a result of the research done by the facilitators, a number of titles were identified and donated by DSE to the workshop library. This has meant that there is now an excellent small resource library available which focuses specificially on writing distance education materials. CADE now has these resources not only to use in this present series of workshops but also in other training workshops. Each participant and facilitator also has seven outstanding books in this field which many are using to train other colleagues.

DISSEMINATION OF INFORMATION

As part of the workshop series, one newsletter was published during Stage 2 of each workshop. This was mainly intended to keep participants and faculty in touch with one another. In addition to doing this, the newsletter also:

- informed other members of the public about the workshop;
- reviewed recent scholarly publications in the field of distance education;
- gave news of current events in distance education;
- provided bio-data on distance educators.

Although only 300 copies of each newsletter were printed it has been learnt that well over 2000 people have read each issue.

Six papers and articles have also been written about the workshop series. One appeared in the Nation newspaper in August 1985 and two were presented at Distance Education Symposiums. Three other articles were published: two in *Development and Co-operation* and the other in the *Journal of Distance Education.*

REQUEST FOR FUTURE WORKSHOPS

Due to the success of these workshops, as far as the training of writers is concerned, many requests have been received from institutions and organizations for places in the workshop. These requests have come not only from institutions within Kenya but from other East African countries including Tanzania, Uganda, Somalia, Sudan and Zimbabwe. Table 4 summarizes the number of people from these countries who require immediate training in writing distance education materials.

Table 4: People requiring immediate training in writing distance education materials

Country	Institution	No. of people
Kenya	CADE	90
	AMREF	4
	INADES	2
	Co-operative College	60
	Labour College	2
	Ministry of Agriculture	48
	Department of Adult Education	10
Zimbabwe	University of Zimbabwe	10
	Ministry of Health	10
Tanzania	National Correspondence Institute	36
	South African Extension Unit	20
Uganda	Centre for Continuing Education	30
Somalia	IITT	24
Sudan	Sudan Extension Unit	20
Total		356

It should also be noted that other organizations not involved in distance education, but engaged in writing basic education materials have requested their writers to be trained.

Editing is another area in which training is needed. After the 1987 writers' workshop series, two workshops to train editors of distance education materials are urgently needed. Yet another area is radio and cassette scripting. Most distance education courses are supported by these components.

In conclusion, this workshop series has contributed significantly to meet the needs of development in Kenya and its neighbouring East African countries. When all the units written in the workshops are printed, they will reach a target population of over 1,000,000 people in East Africa. Considering the fact that these people would not have received training without these materials, their educational status has been greatly enhanced. In addition, these materials are now being disseminated and shared in the rural areas where there are rarely any other reading materials available.

Turkey: Does distance education meet national educational priorities?

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AUTHOR NOTES

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Directives for Turkish higher education are expressed in the document "Higher Education Act 2547" which was enacted into law on November 6, 1981. This act was a reform measure legislated as a reaction to the turmoil and civil disturbances which had shaken the Turkish government and universities in the late 1970's to the point that universities had became highly politicized reflections of violence throughout the country. Campuses were the scene of fighting and even gun battles. The universities' previous autonomous intellectual activities, which many criticized as having nurtured civil violence, became the focus of the reform movement. At the same time, there was pressure on universities to provide spaces for more than just the educational elite who had been able to receive an advanced education. From 1975 to 1980 the number of students applying to universities rose from 115,000 to 190,000 while admissions dropped from 50,000 to 42,000 (Dogramaci, 1984).

The Higher Education Act of 1981. One solution to the growing economic and social turmoil of the late 1970s came in the form of the fourth Five-Year Development Plan (1979–1983) which required that an educational system be designed so as to eliminate inequalities in educational opportunity. The Higher Education Act of 1981 was a law which established the independent Higher Education Council and directed it to plan and coordinate all higher education activities. This Council had as its goal to provide unity in the higher education system by setting minimum standards for degree programs throughout Turkey, by setting minimum qualifications for teaching and by regulating classroom attendance and the length of the academic year. Its mission was to make universities more responsive to needs of the people according to the following priorities. 1) To provide expanded admission procedures allowing more of the growing population to have the opportunity to attend university. 2) To improve the geographic distribution of universities and 3) To distribute faculty members throughout the university system thus providing experienced faculty members even in rural areas. This governing body was empowered to "plan, organize, administer and supervise the education provided by institutions of higher education". In addition it was granted constitutional immunity which gave it an extremely powerful position. (Karagozoglu, 1986)

One solution to the problem of addressing the above priorities quickly and effectively was to implement a distance education program. There were no distance education programs in Turkey before 1980, although the idea had been germinating in the minds of a few prominent educators.

Their plan was to increase the opportunity for education by providing learning opportunities for all people. This included particularly students who failed to win places at conventional universities as well as those who for economic, geographic or other reasons could not study on university campuses. It was felt that distance education would not only benefit the students themselves but, in a larger sense, would help to eliminate the student unrest and civil disobedience which had marked the 1970's (Kennedy, 1982). One university accepted the challenge. Although not an open university, Anadolu University's president, Yilmaz Büyükersen, had a vision which he proposed to the Council of Higher Education. He suggested using the old Eskisehir Academy's television and broadcasting equipment to build a Faculty of Open Education in which large numbers of students throughout Turkey could be given needed education in business administration and economics using television and correspondence materials. His proposal was accepted and within four years the program has grown to an enrollment of over 100,000 students.

The Program. Anadolu University, which coordinates the Turkish open education program, is located in Eskisehir, a city of approximately 500,000. The city is located in Western Anatolia between Ankara and Istanbul. The university is not presently a distance teaching university, but it is a university with a distance teaching department called the Open Education Faculty.

The Open Education Faculty at Anadolu University has been operating officially as an open education program since late 1982. One of its missions has been to increase the availability of higher education to those for whom further education was not previously available. In 1981, before the open education faculty began, there were only 56,000 university spaces for the 515,000 students who applied (Üsym, 1980). By 1985, as a result of the open education program, the number of available student places had doubled.

The main emphasis of the open education program is to provide diplomas for students in business administration and economics. In 1982, the first year of the open education program, there were 29,479 students enrolled. Four years later, in 1986, there were approximately 110,000 enrolled (ÖSYM, 1982–1987). Of the original 29,749 students enrolled in 1982–83, there were 9,600 who remained in the program. Of that number 4,658 were graduated in the first graduation ceremony in October, 1987. Statistics gathered in 1986 indicated that most of the students still lived in cities, were single and were employed at least part-time.

The primary medium of instruction is printed material. This is mailed by surface post. Supplementary materials which are also mailed to students contain information regarding examinations, the monthly newspaper *Anadolu,* and other study materials as needed.

Printed materials are supplemented by more than 200 regular television and radio broadcasts per year. These television programs are aired over the one government operated television channel which is available throughout Turkey. There is a new second channel which is not available for educational programming and presently serves only the principal cities. Students watch television courses at home. Programs are aired daily from 5–7 p.m. on weekdays and 8–10 a.m. on week-ends.

In addition to printed materials and television programs, a third important component of instruction is provided by Academic Service Centers. These centers, at 18 university locations, provide face-to-face lectures at the end of the day, usually from 6 p.m. to 9 p.m. to supplement the printed materials and television programs for students enrolled in open education courses. Students who would like to ask questions or hear additional lectures are encouraged to attend academic service centers where a university lecturer is available to help them. Approximately 80% of the students enrolled in open education courses make use of these academic service centers. It is planned to have such service centers in as many of the 67 cities in Turkey as possible.

Conclusion. Distance education has gone a long way toward meeting the national educational priorities in Turkey. The enormous task of providing educational opportunites to 50 million people, many of whom are geographically isolated, is overwhelming. In addition if the job must be done with minimum resources it creates an additional challenge. There are many problems facing the distance education program, but each year it runs more smoothly and each year plans are made to improve the services. One of the priorities for educational reform, namely that of providing greater equality of access to higher education for those students traditionally not served, has still not been realized. Educationally advantaged students, those from urban areas, are still benefiting most from the higher education reform act. There are presently plans underway to open university study centers in a greater number of rural communities to help rural students have more access to resources. Women are still underrepresented in higher education. Suggestions have been made regarding the potential of the open education program to improve the ratio of women who receive a higher education (McIsaac & Koymen, 1987).

The mission of the Education reform Act was to make universities more responsive to the needs of the people. The distance education program is proving at least partially successful in all three areas listed as national priorities. First, it provides expanded admission procedures by enrolling over 100,000 students, thus doubling the total number of students who had access to higher education in 1980. Second, it addresses the priority of providing university courses in remote areas of the country thorugh television broadcasts and regional support centres. Third, experienced faculty memebers are available to students both in their role as television lecturers and in person at remote sites. Although there are many administrative problems in offering these distance education courses, the Faculty of Open Education at Anadolu University is excited about the challenge and opportunity to meet these, the nation's top educational priorities.

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The knowledge network
A cooperative distance education model using telecommunications technology

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The Knowledge Network, British Columbia's Educational Telecommunications Authority, serves the third largest Canadian province with a population of approximately 2.9 million distributed over an area of 947,800 square kilometers. As the provider of the telecommunications system, the Knowledge Network is at the hub of electronic distance education activities in the province. Working in cooperation with twenty post secondary institutions, communication organizations, government ministries, and with business and industry, the Knowledge Network has developed telecommunication systems in response to a wide range of programs, learner groups and education providers. These systems include satellite to cable television, radio (pilot), closed-circuit video teleconferencing, and telephone based audio teleconferencing, telewriting and computer conferencing.

The most widely used telecommunications media in British Columbia is television. The Knowledge Network leases transponder space on Canada's Anik C3 satellite. Anik C is a 12/14 Ghz device owned by Telesat Canada. The service is on a regional spot beam that covers approximately 1/4 of Canada. Since British Columbia is the most heavily cabled area in the world, most households rely on cablevision systems for delivery of television and FM radio signals. The Knowledge Network signal is usually received at cablevision head-ends and redistributed to all cable subscribers as part of the overall program mix. This is extremely cost effective because the satellite to cable model eliminates traditional TV transmitters and all associated capital operating and maintenance costs.

Now that the public television service is widely accepted and operating 16.5 hours per day the Network is focussing on greater utilization of the satellite transponder. Currently four audio subcarriers are subleased to distribute commercial radio signals while the other half of the capacity is being held for future educational purposes. Recently, sloscan video inserted in the vertical blanking interval (the black band at the top of the picture) of the television picture was successful in showing how course-related visuals could be transmitted throughout the province. Sloscan delivered in this way can be course related on one line of the vertical interval while the delivery of up-to-date teletex weather information is carried on a fee-for-service basis on another line.

To serve clientele with province-wide inter-active data requirements the Knowledge Network is participating in field trials of Microtel's Pacific DS 1200 VSAT (Very Small Aperture Terminal) unit. The DS 1200 utilizes "Band-Edge" technology that allows of the insertion of two-way data into the existing satellite transponder capacity. Again as with the audio subcarriers and sloscan an additional service is being carried within the existing spectrum so that operating costs are only incremental.

Video teleconferencing in British Columbia has developed for continuing professional development education. A closed-circuit dual 450 Mhz cable system links twenty sites in the Greater Vancouver area. This cable system allows the Knowledge Network to receive and redistribute video teleconferences available from outside the province and provides those in the health care community with professional development sessions which can be made available via the closed-circuit system and satellite to groups meeting at sites throughout the province or beyond. Video teleconferencing for professional development is a growing area in British Columbia.

The Knowledge Network is also developing a telephone-based telecommunications network. Audio teleconferencing, using the Network's twenty port teleconferencing bridge, allows users to conduct seminars, tutorials, or instructional sessions in conjunction with, or separate from, programs offered by television and print. By "piggybacking" on the provincial government toll-free telephone lines, users of teleconferencing can reach 90% of the province without incurring long distance charges. Projects are also underway to expand the use of this cost-effective system by exploring telewriting and computer conferencing technologies which will allow instructors and students to interact via a teleconferencing bridge with simultaneous visuals, data, and voice. In Fall 1987, the Knowledge Network will work with a northern Community College to develop an Adult Basic Education program using this telewriting/computer conferencing system. In Spring 1988 this same technology will be combined with print and television for the first British Columbia high school Physics program at a distance.

Recently, five post-secondary institutions and the Knowledge Network formed a task force to explore educational radio. The institutions identified a need to provide updates of televised course content swiftly without the expense of changing a packaged video program. Since radio can reach the same audience as television it is a cost effective alternative either to updating television content or for reaching a large population when the visual dimension is not necessary. As a pilot in Spring 1988 the Knowledge Network will arrange for broadcast time on an existing radio service and coordinate the program offerings of the participating institutions.

Educators throughout the province look to the Knowledge Network for a variety of telecommunications media depending on the learning program. These media include: satellite to cable distribution of television, radio, sloscan, and data; closed-circuit distribution of video teleconferencing; telephone distribution of audio teleconferencing, telewriting, and computer conferencing. Non-telecommunications media include audio cassette, audiographic, video cassette, and (under consideration) video disc.

The development of these communications media has been driven not by technology but by the understanding that difference media have different strengths. Selecting and combining the most appropriate media develops the most effective program.

The content and design of programs are controlled by each distance education provider but the Knowledge Network helps them understand how audience and content determine the selection and combination of media. For example, if the design of the program calls for full motion video for a demonstration sequence the Knowledge Network will assist the programmer in choosing between broadcast television, video cassette and video teleconferencing. If the interactivity is an important part of the program, the program designer can choose live television with phone-in, conferencing (computer, audio, or enhanced audio), or a phone call to a tutor. The following framework illustrates how the intended audience can impact media selection.

PRIMARY MEDIA GROUPS:

POINT TO POINT
- telephone tutorials
- electronic mail
- software (downloading)
- correspondence (audio & video cassette, audiographics)

TELECONFERENCING
- audio
- enhanced audio
- video
- computer

ENHANCED BROADCAST
- ancillary services (transcripts)
- live phone-in

BROADCAST
- radio
- television

Program developers are encouraged to construct an audience profile by considering learner groupings, the type of learning activity, and the expected level of learner motivation and commitment. This profile will assist in the selection and combination of media to meet the needs of the learner(s).

The Knowledge Network is more than a place to "house" communications technology. As the hub of a communication and information network the Knowledge Network has developed strategies to serve learners from pre-school to graduate studies using a variety of methods, techniques and devices. We realize that media differ in their ability to reach a particular learner with a learning opportunity at a given time. We are increasingly aware of our role as facilitator of distance education activities in the province. The Knowledge Network is a telecommunications network but it is also a resource and support network for all educational institutions and organizations who use distance eduction. British Columbia is a not centralized or decentralized distance education model but a cooperative model. Each distance education provider is able to develop programs which meet the needs of their constituency yet each looks to the Knowledge Network as an information as well as communications hub. This hub position enables the Network to identify gaps in province-wide distance education programming, pinpoint duplication of effort, encourage cooperative development, reduce system-wide costs, facilitate effective media selection, and develop communication systems in response to needs.

Trends and issues in American distance education

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The first volume (three issues) of *The American Journal of Distance Education,* has carried twenty-three major articles, three interviews with national leaders in distance education, and critical reviews of media productions and books.

The flow of articles provides a cross section of information about program developments as well as issues, problems, and concerns. We summarize some of the news and issues represented in these articles.

In some programs in rural Minnesota, a Telephone Cooperative and an Educational Cooperative of seven school districts have joined forces to provide a seventy-six mile fiber optic system that delivers two way video channels to each of seven schools, solving the problem of skilled teacher shortage by day, and opening the way to previously unavailable quality adult community education by night.

The Arizona State University televises four channels of class instruction by means of fiber optic cable and microwave transmitter to students in twenty sites. Nineteen of these are industrial plants, allowing employees to take courses during working hours.

In Wisconsin a professor uses the statewide educational telephone network to teach church music. With 200 conference sites, the network allows musicians all over the state to hear from national and foreign experts, without travelling further than the local courthouse.

From California comes research on personal computer conferencing in continuing education of corporate managers. The main reason that managers joined the course was to experiment with the new communications medium.

Computer conferencing and bulletin boards accessed by personal computers train Penn State undergraduate Business Administration students in group discussion skills. Group reports are submitted on line, and instructors provide bibliographies, scholarly articles and responses to questions, also on line.

In Minnesota, The Department of Forest Resources and the Extension Service are providing on-the-job training of employees in microcomputers over telephone lines.

798 practicing engineers registered for the fall 1986 semester in the National Technological University (NTU). The NTU is a consortium of twenty-four engineering schools which expects an enrollment of 20,000 within ten years. It currently broadcasts seven disciplines, by satellite, with over eight thousand hours of programming.

In Canada, the Toronto General Hospital offers eight programs of continuing education every week to its nursing staff. Continuing education for nurses is provided in Wisconsin, Texas, and North Dakota. National programs are offered by such organizations as The American Dietetic Association, and the Association of Operating Room Nurses.

Over 95% of public television stations have participated in the Adult Learning Service of the Public Broadcasting Service, as have one third of all post-secondary institutions. 600,000 students have enrolled, and the increase is 30% each year.

Print-correspondence education caters to about 250,000 students at the college level, and between four and five million in the private, military and religious schools.

The best examples of the integration of print and electronic media come from the Annenberg/CPB Project, and from the International University Consortium (IUC). "The most momentous single event in the history of development and funding for college television courses in this country" is how Dee Brock of PBS describes the establishment in 1981 of the Annenberg/CPB Project (Brock 1987). With $10 million a year for fifteen years the Project funds the creation of exemplary distance education courses at the college level. Titles include American History, The History of Women and the Family, The Africans, The Constitution, Introduction to Sociology, The Mechanical Universe, Planet Earth, and College Algebra. Since million dollar course budgets are the norm, Annenberg/CPB Project courses are developed by faculty teams of national stature.

The new directions of the International University Consortium (IUC), include more emphasis on member involvement and partnership in course development. Like the PBS Adult Learning Service and Annenberg/CPB courses, IUC courses are high quality, integrated multi-media systems. They have most of the features of the courses produced in the big national Open Universities in other countries, although there is a greater interest in the USA in the use of personal computers and telecommunications.

In the United States, in the absence of a decision to establish integrated national distance education systems, we see the growth of various cells of such a system — or perhaps of several parallel systems — through a process of networking and consortia-building.

The systems include most of the features of the more formally established distance education systems in Britain, The Netherlands, Germany, Pakistan, Venezuela, and elsewhere. These include the integrated media package and centralized materials production process accompanied by local distribution systems, although these are less sophisticated than in countries such as Great Britain. The local central relationship in the USA is being worked out on an ad-hoc, collaborative, case-by-case basis which is more appropriate than central planning for this country.

LEARNERS AND LEARNER SUPPORT

Kay Atman examines the role of what she calls Learner's Conation or Striving. She has developed a five stage taxonomy of the conative domain to set alongside the established taxonomies in the cognitive, affective, and perceptual-motor domains.

Chere Coggins believes an important contribution to distance education will be made by research into learning styles. She has examined the relationship between learning styles, selected demographic variables, and student persistance in external baccalaureate degree programs. Her findings reinforce the need for preadmissions counseling, orientation programs, and "learning how to learn" courses.

The problem facing the US is how to integrate local face-to-face support services — usually in local colleges — with centralized course design and delivery systems. In Norway, supervisors in factories provide learner support while employees study centrally produced training materials. In Britain, the Open University has six thousand part-time educators to provide local face-to-face counseling. In the United States, there is still too wide a gap between the resources of face-to-face education and those of distance education.

COURSE DESIGN

The Journal has carried three articles on course design. Grover Diehl undertook a factor analysis of fifteen variables and reached conclusions about the desirable length of a course and its constituent parts. Doug Shale discussed pacing, i.e. the rate at which a student progresses through a course. Dawn Howard focused on feedback. The articles give valuable pointers for the improvement of course design. Don't overload the student, says Diehl. Choose a pacing technique to meet your pedagogical and institutional needs, and bear in mind the effect on the students' motivation, independence, interaction with others, and performance, says Shale. Select a technology to serve the instructional requirements of the feedback system, and do not design feedback systems merely to fit existing or novel technologies, says Howard.

It is obvious that there is a body of knowledge about course design but a great many very poor courses.

THEORY

A third area of concern is theory. *The Journal* has carried an article in each issue about the definition, concepts, and theories of distance education. Since empirical research is driven by conceptualization and theory, the quality of our research is affected by the solidity of our theoretical frameworks. One consequence of the rapid expansion of distance education has been a plethora of wild, erratic, and badly grounded speculations about terminology and concept. I am referring to what has been called "a priori" theorizing; the writing of definitions and proposing of theories "tabula rasa" — on an empty slate.

The theory of distance education should be derived from the work of Charles Wedemeyer and others in the seventies. This was grounded in both correspondence education and the broader theories of education, including humanistic, behavioristic, and cognitive psychology. Distance education research must be justified in terms of broad educational theory, with acknowledgement to research and thinking in countries outside the United States. Not one of the three or four theories of distance education that have been put forward over the last twenty years has been subjected to any form of systematic testing. It seems irresponsible to indulge in speculative theorizing when so much empirical work remains to be done.

PURPOSE

Three items in *The Journal* raise questions about the broad social setting and the philosophical rationale that underlies our practice. Charles Wedemeyer stated the starting point in distance education as appreciation of the potential for development that lies in every person. James Draper has written: "Part of the context in which distance educators work is comprised of the internationally accepted concepts and values of life long and recurrent education". The goal of education, including distance education, is to bring us closer to a learning society where the environment becomes conducive to learning for all. John Ohliger quotes the adult education philosopher, Eduard Lindeman: "Highly developed means of communication are indispensable to highly centralized forms of social control. Rapid means of transportation and communication tend to standardize us and therefore render us easier to control by single authorities."

These writers remind us what distance education should be, and to what it could deteriorate. The power that lies in communications technology means that distance education might, in the most pessimistic scenario, be a means of thought control or at least encouragement of conformity of thinking. Distance education is challenged to preserve individualism and creativity, against the levelling and constricting tendencies that are to be found in the technologies. We have to make special efforts in our course design to introduce learner control, learner projects, and learner activity. We have to be clear about what we want to achieve, and then make the technology work for us.

Course design and students' approaches to study

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INTRODUCTION

Course Design is of major importance in distance education, as it is one area where it should be possible to influence the manner in which students approach studying. The major variation in students' approaches to study is the deep-surface distinction, described by Marton and Saljo (1976), and identified in a range of learning tasks (see for example, Marton, Hounsell and Entwistle, 1985) and also with distance education students in the Open University (Gibbs, Morgan and Taylor, 1984). The importance of approach to study is that it is directly linked to the quality of learning outcomes. Course design and assessment are two major areas that influence students' perception of their learning activities. Their perceptions of the demands of a learning task and their development as learners, are two of the major factors that influence students' approach to study. Course design and assessment are the two important areas for intervention by distance educators for improving student learning.

This paper will describe students' experiences of studying on two Open University courses, which have adopted novel course designs. Both these courses give students a degree of choice and flexibility in which parts of the course they want to study. The pedagogical rationale for the designs of these courses is based on more realistic models of our students. Students are not assumed to be easily manipulated by teaching devices and course structures as is the case with mechanistic models of the learner, which tend to predominate in distance education. Students are able to select which parts of the course they want to study for the assignments. The assumption is that when students have more control over their learning their orientation to study, whether it is vocational, academic or personal, is likely to be of an intrinsic rather than an extrinsic nature. (Orientation to study describes the aims, purposes and values in study. See Gibbs, Morgan and Taylor, 1984.) When students come to their work with intrinsic orientations to study, they are more likely to take a deep approach to study. Also to allow them more control over their learning, as they proceed from foundation level to graduation, should provide a unique contribution to their development as learners.

METHODOLOGY

The two courses involved in this study were both selected because of their specific course design, which allowed students some choice and flexibility in the content of their studies. The first course, Curriculum Evaluation and Assessment in Educational Institutions (E264), consists of six blocks and a number of case studies; blocks 3, 4 and 5 cover empirical methods in evaluation, and students have to choose to concentrate on one of these blocks and carry out a small empirical study themselves, which is submitted as an assignment. Hence, the choice available to the students is in both the block text (a conventional OU teaching text), and the area of the investigation for their project assignment.

The second course, Third World Studies (U204, an interdisciplinary second level course), is structured around a main strand of the block texts, study guides and assessment material; then depending on the choices students make in their tutor-marked assignments, they will concentrate on different parts of the literature strand, the Third World atlas and the case studies. The pedagogical rationale is again to get students engaged in materials of their own choice, and also to recognise the centrality of the assessment in defining the curriculum, particularly in distance education.

The research methodology is in the tradition of the qualitative-illuminative paradigm and builds on other research studies of student learning in the Open University (see for example, Gibbs, Morgan and Taylor 1984).

In the case of E364, a group of ten students were followed throughout their studies. They were interviewed individually at home on three occasions (i) before the course; (ii) during the course, immediately after the tutor-marked assignment, where they chose to concentrate on blocks 3, 4 or 5; and (iii) at the end of the course after the examination.

In the case of U204, a group of fourteen students were interviewed on one occasion, around the mid-point of the course just before the residential summer school.

STUDENTS' EXPERIENCES OF STUDY: E364

How did the students cope with demands of the course?

All students interviewed expressed vocational reasons for studying E364. However there was a clear distinction between students who were primarily interested in the course to gain a credit, and eventually a degree, for career promotion and those who besides wanting a credit, were mainly interested in using the ideas in the course. These differences in aims and purposes in studying E364 were reflected to some extent in how much effort students put into the course, and particularly what they perceived as gaining from their studies. These differences were often related to the level of seniority of the individual teacher. Some students described themselves as "ordinary teachers" and not in a position to be able to use or initiate evaluation studies in their own schools. These different purposes in taking the course were linked to the ways students handled the novel structure of the course.

The details regarding the structure of the course are set out in the Course Guide and the Study Guide and Assignment Booklet. In spite of this guidance, some students failed to appreciate the nature of the choice involved or to fully understand the structure of the course.

There seem to be a number of factors which contribute to this. Some students appear to have developed a type of "habitual response" to OU courses. Probably a majority of courses set out in a fairly high degree of detail what students should learn and how they should go about it. Students who have become accustomed to a sequential study of course materials, followed by a TMA, have problems with the course. Their "syllabus-bound" pattern of study does not match the demands of the materials. For these students, successful study of E364 requires a change of perception of what a course consists of; particularly when we send out materials in full-house style, which are not meant to be studied in depth. These students complained of the workload, as they are attempting to study everything at the same level.

The following example exemplifies the syllabus-bound student. John is a deputy head of a middle school, but has little experience of evaluation. He has taken the Technology Foundation course and three reading diploma courses. He chose E364 partly for career development and promotional reasons, but also to try out his capability at third level, with the longer term aim to get an honours degree. He appeared to have developed a routine pattern of study, which he called a "logical approach". This involved studying all the material in sequence, and finally the TMA; only near to the cut-off dates for submission of the assignments would he focus on the Assignment Booklet.

This study pattern proved problematic with blocks 3, 4 and 5. Although he chose the project option linked to block 5, he failed to grasp the structure of the course. As he said in the second interview:

"I didn't realise until the summer that you could leave out most of blocks 3 and 4, and go straight to your project choice — a shame really."

Overall, he felt there was a lack of clear guidance in the course and he lacked the confidence to choose his own pathway through the material. In the third interview after the examination, although he had gained good grades on the TMAs, he still complained about the workload and the lack of guidance:

"the project I chose needed one section in block 5, but I didn't reach it until too late — with the pressure to keep reading all the text, I didn't concentrate on the project — this is pointed out to you, but still I tended to think of it as all sequential... Choice is unusual and you don't normally get this much of it."

Other students seemed to have failed to understand what is required of them, partly through lack of time to pay sufficient attention to the details in the study guide, but also from their attempts to rush through the block material.

Students who seemed to be most successful in responding to the demands of E364 expressed a strong personal and academic intrinsic interest in the content of the course. One student who described her interests in this way found the project activities the most rewarding part of the course. Any indication of personal choice within an OU course led her to investigate and clarify the details of it as soon as the relevant materials arrived.

Besides this almost "ideal" academic and personal interest in the course, a strategic, confident and primarily vocational approach allows students to address the demand of E364 successfully.

The case of David typifies this strategic and confident method of study. He is a deputy headmaster of a secondary school, he has completed an Ordinary Degree and is now studying for honours. Although he is concerned to get a qualification, he is equally interested in the vocational relevance of the course. He described himself as very pressed for time for OU study, and had developed a strategic instrumental approach to study:

"I always start from the TMAs, followed by a quick scan of all the materials — with my experience of other education courses and an interest in evaluation I can easily decide where to concentrate my effort — I always disregard the formative TMAs as they don't count for grading."

This confident, somewhat instrumental approach to study seemed to cope with the demands of the course, particularly around blocks 3, 4 and 5. Although he was critical of the course where it became research oriented, at no time in the interviews did he complain about the workload. At the end of the course, he described his gains as follows:

"a sense of satisfaction that what I was learning I was able to apply — talking to staff about evaluation and using the material — I hadn't just spent a year fruitlessly beavering away to gain a qualification."

These descriptions represent the major variations in how students tackled this course: the syllabus-bound; academically and personally focused; and strategic and vocationally focused.

Where the students have developed their skill in learning, and are able to take control of their learning (Taylor and Morgan, 1986), they can meet the demands of the course, and adopt a deep-approach to study. However, some students failed to grasp the structure of the course and the choice element around the project. They seem too constrained by "habitual study strategies", which involve working sequentially through all the material, and perceptions of the status of the correspondence text; i.e. all the text must be studied at the same level.

STUDENTS EXPERIENCE OF STUDY: U204

How did students handle the choice and flexibility in Third World Studies? The main variations in how students tackled the course are similar to those described above, although the issue about vocational relevance is less pronounced as Third World Studies is a broad second level interdisciplinary course.

A number of students interviewed were clearly having difficulty with the structure of the course. They found it difficult to scan through the range of teaching materials, then the assignments, and then to select which parts to concentrate on for in-depth study. The following student illustrates these problems vividly:

"the course is going satisfactorily, but I do find it completely different from the other two (a foundation course and a second level course) — they consisted of 'read the units, write the TMAs and do the exam' — even in reading the units they encourage you to be selective. I find it involves a lot more work to be selective, as I'm not sure I'm covering the right things — I want to read it all. There are too many paths you could take and you feel you could take the wrong one. The guidance isn't tight enough. On other courses you didn't need to be selective — some parts were more important, but you were expected to read everything and then you could do the TMAs."

There is clearly anxiety and ambiguity about selecting areas of study, particularly when this departs from the style of the previous courses the student has taken. This preferred way of study was highlighted in the interview.

I: "How would you describe your style of studying?"

S: "I like to take it step by step — I want to see the end product coming up. This is the problem with U204. I don't want to skirt round bits here and there — I want to know exactly what's there and then perhaps I can be selective. — I wonder whether my pattern of study was set by the previous courses and this one is different. I'd got into a routine then all of a sudden I come to this one and its quite different — you need a different style to get through the work — perhaps that's a major fault of the course. If this course had adopted the style of the other ones I've done I would probably have got it right from the start — so perhaps the OU should set up all the courses in a similar structure, so people can get into a method of study."

I have used this rather long quotation as it vividly conveys the ways some students find the course. This type of syllabus-bound, sequential response to the course seems to be related to their background in the OU and their "academic socialisation" into a linear sequential mode of study, embodied particularly in the foundation courses in the OU.

The more experienced students who have the confidence to be selective find the course easier to handle. Their pattern of study can be described as TMA focussed. The element of choice in what is studied for the assignments is appreciated, as one of the interviewees put it:

"I really like choosing — I like to ask myself, what is my aim? That's why I always use the TMAs as my starting point."

This student's patterns of study had developed significantly since his foundation course. He described his early OU experiences as follows:

"in the first two years the wealth of material overwhelmed me — I'd try to read the stuff, then spend two days worrying about it. I really felt I had no way of getting through the material."

After a year's break from OU study, he described his study habits very differently:

"When I came back to the OU, I found I could scan the material and also had the confidence to use my own opinion, which is a vital difference in my studying now... to realise that tutors expect you to give your opinions as long as it's based on your understanding of the material."

This pattern of study was typical of the students who seemed to handle the course with the minimum of difficulty. Some students, although managing well with the course (they had all A-grade assignments and were relating some of the course content into their own work situations) still had anxieties about the course structure. For example:

I: "How do you find the structure of the course?"

S: "I don't like it because I feel there are a lot of things I'm not covering — that worries me slightly. I think there's going to be an exam at the end of this and I've not covered everything because of the amount of time. I was talking to my tutor about this only last week, she reassured me saying 'well you're not supposed to cover everything'. But I still don't like doing something knowing there are parts I haven't done. On previous courses, I've covered everything and am confident that I know everything that's there."

It is interesting how the specially prepared teaching texts are perceived as constituting the entire body of knowledge in a particular area of study. Perhaps this is not surprising, in view of the structured nature of the foundation courses, which play a large part in students' "socialisation" into OU study. However, for helping students towards more independence and autonomy in their learning, this perception of what a course consists of can be problematic.

CONCLUSIONS

These studies identify the range of study patterns which students adopted in two courses which allowed some choice and flexibility in what students studied. The educational rationale for these course designs is that when students have more control over their learning, they are more likely to tackle their work with intrinsic orientations to study and to take a deep-approach to study. Some students welcomed this opportunity to take more control over their studies and from the evidence were adopting a deep-approach to study. However, other students seemed totally unable to cope with the demands of the different course structures; they complained of the lack of guidance and lamented that all OU courses don't have the same linear sequential structure.

Some of these findings give support to the criticisms made by Harris (1987). He is critical of how the complexities of educational discourse and of teaching and learning are rationalised into a primarily didactic teaching system; and how crude instrumentalism of some students has a drastic impact on the quality of learning outcomes.

There is perhaps an assumption in the OU that all students will become "quality" learners at some stage. They will come to see learning in a particular way, understand the demands of the subject, take particular approaches to study and achieve quality in learning, the sort we value as a university. Perhaps this is too optimistic. Certainly some of the students in the present studies had not developed as learners. They seemed to be constrained by "habitual response" to OU study. For these students becoming more experienced learners requires a change of awareness of what is required in study. The function of dialogue seems to play a unique role in helping students. Guidance and direction can be set out in study guides, but they do not always lead to changes in study patterns, as the present research indicates.

The challenge for distance education is to adopt course structures so as to facilitate dialogue, which will serve to facilitate students' development as learners.

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Improving distance education in India

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DISTANCE EDUCATION IN INDIA

Forty two recognised institutes and an equal number of private institutes are providing distance education in a wide range of subjects. These institutes work in isolation with duplication of effort. Correspondence is the mainstay and modern communication facilities, though available, are not utilised.

At school level there are five boards which give correspondence education at secondary and higher secondary level. Total enrolment is about 62,000 which is 0.30% of the total enrolment at this level (Mullick, 1987). All institutes follow the same syllabi in Arts, Commerce and Languages as prescribed by the respective boards. The teaching of science is negligible, and there is no vocational stream. An Open School gives similar courses India-wide and also teaches vocational courses like typing and tailoring.

At the postsecondary level there are 34 institutes with a total enrolment of 2,31,604 in 1986 (UGC Report, 1986) which is about 5% of the total enrolment at this level. This is much lower than the target of 33% suggested by Education Commission (1964–66). All follow the same syllabi prescribed by Universities.

Professional courses are given at diploma, degree and post graduate level in Education, Public administration, Management, Journalisim, Law etc. Enrolment is highest in Education. Only one institute gives an inservice Bachelor in Technology course. The departments of extension education in the five Agriculture Universities give skill oriented courses in agriculture and animal husbandry to farmers in rural, hilly, and tribal areas. In addition many private institutes prepare students for All India competitions and entrance examinations in medical, technical, agriculture and banking institutes.

GOALS AND OBJECTIVES

Goals may be derived from various documents on Distance Education like the Education Commission Report (1964–66), Parthasarthy Committee on Correspondence Education (1971), All India Seminar on Open Learning (1970) and National Policy on Education (1986). The gist is that we should expand and improve distance education as a vehicle for life long education, equalising educational opportunities, and supplement the existing formal education for the benefit of those who cannot attend schools and colleges, by fully utilising all the modern communication technologies.

RESOURCES AND CONSTRAINTS

The country has sufficient expertise in distance education so far as the print and correspondence modes are concerned. But we need an inventory of experts, institutions and innovative practices to be able to plan in a coordinated manner.

The country has enormous facilities and scope for using word processing, radio, television, audiotapes, video-tapes, micro computers, satellites, audio-teleconferencing, telephones, computer based education and other interactive technologies (India 1986). But D.E. institutes have neither the infrastructure nor the trained personnel.

Distance education has been treated as an adjunct to the formal system. The policy that it should be self supporting has affected the quality of courses and student services (Mulay 1984). The setting up of the Open School, Delhi, the Open University, Andhra Pradesh and the Indira-Gandhi National Open University heralds an improvement.

SYSTEM ANALYSIS

Turning first to the school level, if we analyse the courses being offered by the six institutes, we find that all have developed similar courses in History, Geography, Civics, Economics, Commerce, Mathematics, English and Hindi. Three institutes offer courses in science and all develop their courses independently of each other. We should develop fewer but high quality course packages by the coordinated efforts of each institute. Apart from English and Hindi, some teach other languages like Urdu, Sanskrit, Bengali, Oriya. India is a polyglot nation with the problem of teaching three out of sixteen languages to every Secondary and Higher Secondary student. The development of centralized mutlimedia language course packages through these institutes would go a long way in solving the language

TABLE 1

ENROLMENT IN DISTANCE EDUCATION INSTITUTES IN HIGHER EDUCATION DURING 1985–86.

Courses	Number of Institutes	Enrolment	Percentage of total	Average enrolment per institute
GENERAL				
Pre-University	9	7,352	3.2	817
Arts (B.A./M.A.)	24	1,21,555	52.5	5065.08
Commerce (B.Com./M.Com)	21	50,508	21.8	2405.00
Science (B.Sc./M.Sc./M.A.Maths.)	4	5,385	2.3	1346
PROFESSIONAL				
Education (B.Ed./M.Ed.)	10	24,952	10.8	2495
Public Administration	4	8,833	3.9	2208
Management	5	5,099	2.3	1019.08
Law	6	3,565	1.6	594
Library & information science	4	1,191	0.6	198
Others	8	2,448	1.6	306
TECHNICAL				
B.Tech.	1	716	0.4	716
		Total 2,31,604		

* N.B. The data has been taken from Appendix XXXII U.G.C. (1986).

problem of India. Only the Open School provides vocational courses as recommended by the education commission (1964–66) and the National Education Policy (1986). There is a great need of vocational courses in agriculture, health and industry.

To achieve the universalisation of primary education, inservice and preservice teacher training programmes should be initiated to improve the quality of teachers so as to decrease the drop out rate, wastage and stagnation in primary schools.

The courses given by postsecondary institutes are mostly B.A., B.Com., B.Sc., M.A., M.Com., and M.Sc. They also give professional courses like B.Ed., M.Ed., Personnel Management, Library Science, Tourism and Hotel Management. The pattern of enrolment is given in table 1.

The enrolment in an institute varies from just 26 (CIEFL Hyderabad) to 68,554 (Madurai) (UGC, 1986). Several institutes have enrolments well below the 1000 mark and are thus non-viable (Mulay 1985).

The education commission (1964–66) had recommended that correspondence courses should be organised to help workers in industries, agriculture, health and other fields to improve production. They specified many subjects like landscaping and gardening, architecture, plumbing, drafting, surveying, firemanship, automechanics, commercial art, electronics, radio, television and so on. This recommendation has remained unfulfilled. The list should now be longer to reflect developments in energy, environment and computers.

Agriculture Universities in Pant Nagar, Punjab, Tamil Nadu, Jabalpur have developed many correspondence courses for literate farmers to improve their productivity. The Tamil Nadu University is using audio and video tapes as well as Radio & T.V. programmes in agriculture in their courses. One course for paramedical personnel is being implemented in Patna (A.I.U. 1985). But these courses are insignificant compared to the demand in agriculture, health and industry. The formal system already consists of 1400 technical schools, 191 engineering colleges, 286 institutes in pharmacy, nursing, dental and medical and 108 institutes in agriculture. Many of these institutes have extension departments which could respond to the need for distance education in these fields.

As regards media technology, graphic aids, audio tapes, videotapes, Radio, T.V. film and computers are already in use in Formal Education but not in Distance Education institutes. Educational radio programmes are being produced by 44 stations and relayed by 34 transmission stations giving a total of 78 cities. The number of stations spreading information in agriculture, health and industry to the general population is still greater. However, only four institutes in Punjab, Andhra Pradesh and Tamil Nadu are using radio lessons and two are using audio tapes and videotapes in distance education.

The expansion in communication technology in India will be tremendous in the years to come. Under the Programme of Action for implementation of the National Education Policy (1986), the T.V. and Radio transmission network will be expanded to provide minimum ETV and Radio programme coverage for identified target groups in all major language zones by 1990; Radio Stations will be established in Universities/Colleges during the VIIth Plan (1986–90) a dedicated educational TV channel will be provided by 1991–92, and a dedicated satellite system for educational needs will be created in the long term.

The availability of these facilities poses the biggest challenge to distance education planners. The expertise is available in the Central Institute of Educational Technology, New Delhi, the Space Application Centre, Ahmedabad, the Indian Institute of Mass Communication, New Delhi, the Advanced Level Technical Training Centre, Ghaziabad and many others.

INSTITUTIONAL FRAMEWORK

In order to attain these objectives D.E. has to be renovated and expanded at all levels and sectors of education. The Indira Gandhi National Open University has been set up to enlarge and coordinate the postsecondary distance learning institutes in the country. The University Grants Commission is also concerned with the improvement of distance education given by these institutes. But none of them is concerned with school education. In addition, scores of private distance education institutes need guidance.

The Education Commission (1964–66) had recommended the setting up of the "National Council of Home Studies" and the Parthasarthy Committee (1971) had recommended the setting up of the "National Institute of Distance Education". None of these recommendations have been implemented. There should be an All India Organisation with the responsibility of examining the development of D.E. as a whole from school to college in all areas including agriculture, health, industry and commerce.

Linkages with local support services need to be designed and developed. A national system of local and regional centres for distance students would help. This organisation should be conceived and developed with care. Its functions could be:

a) to provide policy perspectives to the Government of India and State Governments with reference to the proper development of distance education in different parts of the country.
b) to provide professional education and training to distance education course writers, tutors, evaluators, planners, managers, administrators and researchers.
c) to undertake, promote and coordinate research into the special problems of distance education and its application in India.
d) to hold conferences for directors, policy makers and key personnel for developing, enlarging and shaping distance education in India and in making use of emerging communication technologies and other infrastructures available in the country.
e) to establish a network of state agencies, model courses, media resource centres, learning centres to serve as research and development instruments to be emulated and adopted by others in the country.

The analysis presented here is neither comprehensive nor sufficient. One task of the proposed body would be to develop an information system to get regular data for a more detailed system analysis.

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The instructional designer meets the expert

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INTRODUCTION

As we all know, instructional designers are experts. The nature of their craft demands that they frequently work with other experts from a wide variety of backgrounds. In distance education, the Instructional Designer (ID) is often required to collaborate with subject matter experts in developing the content of learning materials. The problem that confronts the ID in such a situation is the extent to which the word of the expert can be accepted (and vice versa?). In other words, how expert is the expert?

THE ANALYSIS OF EXPERTISE

The nature of expertise has been a subject of investigation in recent years with experiments usually comparing the performance of experts and novices. Even the hallowed ground of pedagogy has come under scrutiny, with recent studies on expertise in teaching (Carter et al.). The issue facing the ID is a little different. Rather than having to locate an expert, the expert is usually "provided", having been identified by someone else as the person for the job, or having volunteered. So, faced with experts, the ID has to assess just how capable they are, and how much their expertise can be relied upon.

In some cases this is easy. The ID working with Jack Nicklaus on his video of golfing tips had, I'm sure, no doubt about the abilities of that expert. So, in a training situation, one usually seeks an expert in the form of a "best performer". Good advice has recently been given on how to identify such people, and how to make the best use of them (Spitzer, 1987). But what if, as is more usual in distance education, you are an ID working with experts in a cognitive area, where the degree of expertise can be rather more difficult to assess? You may be presented with subject matter experts who are expected to assist with the content of the learning materials that you are developing, and yet be unaware of how good they are. How much can you rely on their ideas and advice? Further, should two experts disagree over a matter of some complexity, how do you resolve it?

Often the answer becomes a matter of the ID's own personal opinion and judgement. In fact, it could reasonably be assumed that an experienced ID should be quite good at judging expertise. However, it would be better to have some guidelines on how best to make such a judgement, rather than rely purely on personal prejudices or "gut feelings". The guidelines that we shall consider take the form of assumptions that can be made about the nature of expert knowledge, as well as possible applications of these assumptions.

A few years ago, James March gave educational administrators some sound advice on the analysis of expertise (March, 1974). In essence, he suggested starting in the areas of evidence and testimony in the law, using the techniques of interrogation and confrontation from those areas to assist in the process of analysis. Despite the rather negative connotations of the two words, an examination of them reveals how helpful they can be, if used in the right way.

Interrogation is the skill of asking questions that solicit information on two critical issues:

What can the expert say that is relevant to the problem?

What degree of confidence can be placed in what is said?

Note that these are joint problems shared by the ID and the expert. Both are uncertain about what information might be relevant and what degree of confidence to place in the statements that are made. Interrogation is a skill for which training is available, and while the rules of iterrogation that are taught in legal training obviously are not immediately transferable to the work of ID's they may nevertheless provide a working base.

Confrontation involves observation. For example, we can confront one expert with another and observe the interaction, pinpointing areas of agreement and disagreement. Principally, though confrontation proceeds from an assumption that the quality of answers can be assessed if the right questions are asked. Thus a part of our task is to improve the quality of our questioning.

ASSUMPTIONS ABOUT EXPERT KNOWLEDGE

We now come to the crux of the matter. Both interrogation and confrontation require inferences to be made, based on certain analytical assumptions about expert knowledge. It is these assumptions, developed by March, in which we are interested. They are listed below, together with suggestions on how to apply them to the work of an ID.

Naturally, the assumptions are general tendencies, rather than universal rules. You have probably already thought of exceptions to each of them. As March admits,

"Knowledge is not necessarily homogeneous, density of knowledge is not necessarily correlated with precision; the errors of experts may not be independent at all; variations in confidence across experts may be quite meaningful; knowledge may be quite unconnected." (March, 1974, p. 31)

So, a contingency perspective is required — each situation needs to be assessed carefully to see how the assumptions might be applied.

CONCLUSION

The assumptions have been presented to give ID's a possible basis for their assessment of the capabilities of experts. Each is a way of looking at expert knowledge that can stimulate the formulation of relevant questions in such an assessment. In other words, their value is to provide ideas for the formation of questions: ID's should always bear in mind that, for

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ASSUMPTION	APPLICATIONS
(i) The Homogeneity Assumption. We can attempt to assess the comptence of experts by sampling from their knowledge. We can check knowledge in areas shared in common. If experts know what they are talking about in these areas, we assume that they know what they are taking about elsewhere.	If you are working with an expert in business statistics and you have a background in mathematics, check the expert's knowledge of a mathematical area in common.
(ii) The Density-precision Assumption. We may not be able to tell whether an expert's knowledge is correct, but we can assess the density of that knowledge. If our expert can recite facts, studies, theories, documents, reports and observations, the precision of that knowledge seems greater than if the expert reports only on a sparsely occupied memory. If conclusions are reported without a richness of detail in support, the expertise can be doubted.	Question experts on their area of expertise. Focus on one area, and persist with that topic. Questions should be increasingly specific, until they narrow down to single concepts, and how these might best be presented and learned.
(iii) The Independence of Errors Assumption. Expertise can be assessed by comparing the expert's observations with those of other experts. It is assumed that if several experts say the same thing, it is probably ture. An expert who usually agrees with other experts is likely to be more reliable that one who disagrees with others.	Check some of the expert's observations with a suitable up-to-date text. Further, a discussion with another expert, during which you can recite the observations of the first expert (without revealing their origin), may expose any disagreements.
(iv) The Distribution of Confidence Assumption con-In any body of knowledge, there is variation in the degree of confidence with which different beliefs are held. If an expert does not exhibit such variation, it is assumed that he is not as well informed as those who do.	Such questions as"How wide an application does this concept have?", or"How well developed is this theory?" should reveal any variation.
(v) The Interconnectedness Assumption. Knowledge tends to exist in interconnected networks, rather than as lists or discrete "chunks". The assumption is that experts who describe knowledge is terms of a series of independent bits are either experts in a domain in which the knowledge is less reliable than others, or are themselves less reliable experts.	Invite the experts to explain the interconnections and interdependence of areas within the body of knowledge. Suitable frameworks for such explanation can be offered to the expert, in the form of devices such as concept maps and pattern notes.

experts to provide the right answers, they need to have the right questions posed.

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Social development of the GDR: consequences for higher-level distance education

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The social development of the GDR and the scientific and technological basis of its economic strategy determine the nature of initial and further education of university and technical college students and graduates organized in both full-time and distance education.

The basic concept of higher level distance education, created in close connection with full-time education more than 36 years ago, has fully proved its worth. Nevertheless, its further shaping in content and didactics is necessary and is still continuing.

Approximately a quarter of the 1.7 million university and technical college graduates in the GDR (20.5 per cent of all working people) have attained their qualifications by means of distance education. At present distance courses in 130 subjects are offered by 20 out of 53 universities and colleges of higher education up to degree level (P. Fielder and B. König, 1979:223). Between 1981 and 1986 nearly 200,000 graduates of universities and technical colleges were further educated mostly in the form of distance education (S. Schwanke, 1986:277). It can be stated that initial and further education in the form of full-time and distance education have become decisive factors in social and economic growth as science pervades all areas of society. On this basis the educational environment of the 1990s and the turn of the century is outlined.

Since the beginning of the 1970s there has been a concentration on those basic study fields (Grundstudienrichtungen) whose graduates are important for the improved performance of the national economy — using the results of science and technology. Therefore initial higher education in technical, agricultural and economic sciences was central in initial distance higher education, and was administered in a centralized and uniform way.

Distance higher education in social sciences was continued in a decentralized way.

Since the beginning of the 1980s further education has become an equal function of universities and colleges of higher education in connection with research and initial education. Therefore 160 postgraduate courses of study lasting up to 4 semesters (organized as distance education) are offered with and without a qualification in a special subject (Fachabschluss).

Additionally nearly 500 short-time courses are run annually. In content they are oriented towards the introduction and use of key-technologies which are decisive for the growing rates in productivity and the renewal of production. In this way the large intellectual potential available to the GDR can be considerably improved and realised.

In accordance with the further shaping of a developed socialist society in the GDR the reform of initial and further education of engineers and economists was introduced in the middle of 1983. At the beginning of 1986 the introduction of long-term development of the initial and further education of agrarian engineers and economists at the universities and technical colleges of the GDR followed. (See Footnotes [1] and [2].)

The following aims in educational policy were pursued (Böhme, 1985:56) — in future all engineers, agrarian engineers (Diplomingenieure) and economists (Diplomwirtschaftler) will be educated within one single higher educational process in which the different needs of their future employment are taken into consideration. The initial and further education as a whole is realized with higher standards. The education of technicians and economists without a diploma degree (Techniker und Wirtschaftler) in industry and agriculture will be ensured by a new level of technical and economic education.

The consequences for the development of distance and evening studies for engineers and economists are also set out in a new conception[3]. The further general development of achievement in higher education in universities and colleges for those graduates doing practical work has been conceived[4].

The newly worked out conception for distance education of engineers and economists (Schwanke, 1986:277) concentrates on the essential study fields for the national economy. In the academic year 1988/89 there will be admissions in the subjects of informatics, engineering materials, nuclear power engineering and accountancy/statistics.

Skilled workers with a secondary school certificate (Abitur) will be accepted into initial education organized as distance education. They attain the final certificate at universities (Hochschulabschluss) which allows them to work as an engineer or economist. The shortened period of study for engineers will be 5 years, and for economists 4 1/2 years. It is possible for them to carry on their education in postgraduate studies up to diploma level externally.

Engineers and economists who are graduates of the former technical colleges (Fachschulabschluss) can achieve the final certificate at university or the diploma degree by means of postgraduate distance studies.

It is our aim to realise the principles which are decisive for the success of distance education. In each phase of the development of our higher education system initial and further education in full-time and distance studies are developed as an organic whole. This has the effect that the staff of the universities and colleges of higher education are involved in initial and further education. These staff members are engaged both in full-time and in distance education activities. That is why no special distance university has been set up in the GDR as in other countries.

Working people take part in distance education without interrupting their professional work. Therefore a far-reaching conformity between professional work and initial and further education in the form of distance education must exist. The same applies to the scientific content and pedagogical and organizational aspects of courses. For this reason professional work and the chosen field of study should correspond to each other. Rich experiences in the life and profession of the participants in distance education are consciously put to use in shaping the content and methodology of initial and further education. Practical and professional experience can be fruitful to higher education. Work and study activities are interwoven in a productive way, for example by taking up the problems of production in scientific work during initial and further education. The newest research results are immediately transferred into practical use by the working students. The professional work of the distance education students is theoretically supported step by step.

Those graduates of distance education very quickly achieve a high standard of performance without a preliminary phase. The working participants of distance education become "outstanding intermediaries between science and production" (Fielder and König, 1979:224). This is the best example of the connection between theory and practice.

The main factor influencing higher education in the GDR is its applicability to economic activity. In subject related studies and in limited specialized studies tasks which are similar to research are worked on. In preparation for the diploma degree research projects are carried out whose subject matter is part of the main research projects of the university or college of higher education, whereas the distance students find their main fields of investigation in the factories. The unity of research, teaching and study, expressed in this way, is further emphasized in distance education, where the solution of social problems and tasks from the central and regional plans in science and technology is facilitated.

As the work and study process are closely connected in distance education the character building potential can be used effectively for the development of the personality of the distance student. In this context the unity of training, education and self-education is guaranteed to a high degree.

The distance education process which is characterized by the specific consultations, seminar courses and final phases for preparation of diploma theses leads to personal communication and co-operation between staff members and distance students. This is an essential condition for the formation of socially responsible and scientifically highly qualified personalities. Such a partnership is typical for higher education in the GDR.

These principles are kept in mind when a didactic concept of higher level distance education is worked out. As the aims in initial education in full-time and distance studies are the same, fields of study are fixed in the one curriculum. According to the different needs of the students there is a choice of content. This is secured by directives for teachers (Lehrhinweise) and study instructions for distance students (Studienanleitungen).

The new standard will be guaranteed by improvement of content. The demands of the scientific and technological revolution make the implementation of new fields of study necessary. With the general introduction of informatics and use of computers in university education (Möhle, 1987) there have been certain consequences in the field of initial and further education organized as distance education.

In order to train specialists in informatics a corresponding field of basic study has been recently created. Working people can follow courses of study for a four year period while still at work through distance education. It is our aim to introduce informatics training in a user oriented way for all students.

As an example of this the continuing training in informatics for economists and diploma economists should be explained in three stages. In the first stage all students are given basic training in informatics which is computer based. For 15 per cent of students studying economics a more in-depth training is provided as the second stage. Finally a third stage of training trains specialists in economic informatics (Apelt, 1986:198).

During the first part of the initial distance study course there are 14 days of individual study periods with consultations, amounting to 20 a year. The quality of individual study is determined by various factors; on the one hand the mastering of the methods and techniques of individual study and its self-assessment by the students, on the other hand through the guidance of the tutors, finally by the quality of the printed study material (Lehrbriefe) which contains the scientific content and study guidance as well as exercises for self-evaluation. Even programmes for teaching, exercises and checking can be worked through. Individual study is followed by consultations with student groups in consultation centres. Problems of content which arose during individual study are discussed and solved. In conjunction with the consultations printed and audio-visual aids are used especially closed circuit television. From time to time tests and examinations take place.

Seminar courses which are made up of lectures, seminars, exercises, practical work, excursions and examinations mostly take place at the beginning and end of the academic year. Scientific discussion is characteristic in these seminars.

During the second part of the initial distance studies there are longer periods of individual study and independent scientific work. Various seminar courses of a duration of two weeks are included.

In the final part, that is the preparation of the thesis, research work is carried out and on the basis of this a diploma thesis is then written which has to be defended (Möhle, 1983:26).

The didactic form of teaching and studying undergoes certain changes when computers are involved. Working procedures in the form of exercises and training for instance computer-based case studies and projects (Planspiele), practical sessions and complex computer-management exercises relevant to decision-making, have been introduced.

Mostly work goes on in computer booths, at CAD/CAM stations and suitably equipped places for managers. Universities and factories receive the necessary computer equipment. For this purpose the computers of the university, central macro-computers and personal computers are available. The technical and material equipment in the factory of the distance student concerned can also be brought into use.

In future all parts of distance education will take place uninterruptedly in the university or college of higher education, where the distance students matriculate. Selected parts of the course can be carried out by changing university in order to make use of CAD/CAM centres, special laboratories and technical schools (Technikum). It should be noted that the initial and further education in all other areas of study (that is outside technical, agricultural and economic sciences) in the distance education format will remain unchanged.

Evening courses should be implemented again in concentrated industrial areas. Close co-operation between industrial combines (Kombinate), as well as agricultural co-operatives and other state and social institutions and universities and technical colleges is a characteristic of the GDR.

The existing arrangements on co-ordination between industrial combines and universities will be put to use. This co-operation in distance studies is complex and many-sided: there is co-operation in counselling, delegation and admission of future distance students, in motivating and stimulating employees as distance students, in helping them in work and study on the basis of a contract (Forderungsvertrag), particularly in connection with the topics for final theses, in guaranteeing legal conditions for giving time off work for studies. Distance students are given 36 days, with full pay. All distance students have three months off work to write their diploma thesis.

University related further education will concentrate on the following main areas (Kottwoski and Zinkahn, 1987:167): information processing, computer technology and CAD/CAM technology, microelectronics and automization technology, biotechnology, energy economy, material sciences and their natural scientific foundation in solid state physics and chemistry, management studies, foreign trade studies, foreign languages for interpreters, foreign language teachers and non-linguists. The successful organizational forms and methods will remain: postgraduate studies will be defined, the need for short courses will continue to increase. Research-orientated seminars will be given priority, they are organized in a problem-oriented way. Part-time studies in particular areas of teaching and the choice of available lectures (Gasthörerschaft) will be broadened.

At the postgraduate level on the basis of individual studies consultations and seminar courses also take place. Discussions are controversial and polemic. Short contributions by the participants to the discussion are of growing importance. Research and developmental work is integrated into the consultations and seminars and leads towards the final thesis (Möhle, 1982:51). The centres for further education are particularly suited to postgraduate study. We pay a lot of attention to further training in informatics and the use of computers for graduates working in professional fields by preparing postgraduate studies lasting several semesters and various short courses. This is represented by the distance education postgraduate course of study "Computer-based plant automation" (Burucker, 1985:273).

Practical work combined with theoretical instruction is carried out at computer terminals in the university or in the factories of industrial partners. A final thesis which is valuable for both university and factory must be written and then defended.

FOOTNOTES

1. *Konzeption für die Gestaltung der Aus- und Weiterbildung der Ingenieure und Ökonomen in der DDR vom 28. Juni 1983.*
2. *Konzeption für die langfristige Entwicklung der Aus- und Weiterbildung der Agraringenieure und Agrarökonomen an den Hoch- und Fachschulen der DDR vom 28. April 1986. In* Das Hochschulwesen *(Berlin, No. 7, 1986, S. 176 ff).*
3. *Konzeption zur Entwicklung des Fern- und Abendstudiums für die Ingenieur- und Ökonomenausbildung. In:* Sonderdruck der Verfügungen und Mitteilungen des MHF *(August 1986).*
4. *Konzeption des MHF zur weiteren Entwicklung der Weiterbildungsleistungen der Universitäten und Hochschulen für die in der Praxis tätigen Hoch- und Fachschulkader. Ministerium für Hoch- und Fachschulwesen, Februar 1987.*

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Access to higher education and training in the South Pacific
The role of telecommunications and distance education

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THE SOUTH PACIFIC REGION: AN OVERVIEW

Whereas the South Pacific region incorporates all of the Pacific Ocean below the equator from Australia in the west to South America in the east, in this paper were are concerned with the south-west of this region only and that too excluding Australia, New Zealand, Papua New Guinea and New Caledonia. This would then leave us with a region that is serviced by the University of the South Pacific extending from the Solomon Islands in the west to Kiribati in the north and Cook Islands in the east. With the Fiji Islands and Tonga at the base of this semi-circle we are looking at a region much larger than Australia but with a total land area about the size of Tasmania. Other countries in the region include Niue, The Tokelau Islands, Tuvalu, Vanuatu, Western Samoa and Nauru.

All of these countries except The Tokelaus, are politically independent nations. The Tokelau Islands is a protectorate of New Zealand, administered through Western Samoa. Except for Nauru, which is blessed with phosphate deposits, all the other countries of the region can be described as poor in monetary terms. The main sources of income for most countries are copra, fish, tourism and in the case of Fiji Islands, cane sugar. Foreign aid therefore of various kinds provides an essential supplementary source of income. Communications and transport facilities within the region are equally poor. While some of the difficulties with communications are related to the vast distances between the numerous islands and small populations on them, money and technical knowhow to maintain these services pose the greatest difficulty. Smallness, distances and money also determine the Islander's access to formal education and training. In most instances access to formal education is solely determined by the facilities governments of the countries can make available to their citizens.

THE ROLE OF THE UNIVERSITY OF THE SOUTH PACIFIC

The University of the South Pacific is a regional university and in that regard quite a successful one too. It was established in 1967 following the reports of Sir Charles Morris (Morris Report 1966) and Sir Norman Alexander (The Alexander Report 1967). The first students to the University were admitted in February 1968. The Royal Charter of the University, granted to it on 10 February 1970 defined the objects of the university as being

> the maintenance, advancement and dissemination of knowledge by teaching, consultancy and research and otherwise and the provision at appropriate levels of education and training responsive to the well-being and needs of the communities of the South Pacific.

Thus the University was to have a *regional role*. Its immediate responsibility would be the South Pacific countries associated by name with the University Charter, but it would aim to establish close associations with other countries in and outside the South Pacific region as well. Within this context the University was to be responsible for building bridges, ie making higher education and training opportunities accessible to the communities of the South Pacific.

How was the University going to achieve this? This was the question that Sir Norman Alexander was commissioned to address. It was obvious that in view of the geographical spread of the University region and the resources available that all its people desirous of higher education *wouldn't* be able to receive it if the University was to confine its activities to on-campus face-to-face teaching only. It was imperative from the start therefore, that the University must attempt to "reach out" into the communities it was to serve. The Morris Report had recommended this effort and the Alexander Report strongly endorsed it suggesting that "extra-mural" studies form part of the University's teaching effort. The 1968 Programme Planning Committee allocated the administration of the "extra-mural" teaching functions of the University, initially, to the former School of Education where it remained until becoming part of the responsibility of the separate department of Extension Services.

THE REGIONAL CENTRES NETWORK

The first Vice-Chancellor of the University in his introductory remarks to the University's first development plan had expressed the view that

> the University of the South Pacific was a regional university and it could be healthy and successful only to the extent that it served and justified the support of the countries of the region. The services we could offer in higher education to the countries of the region would be much enhanced by the setting up of University Regional Centres.
> (Aikman, 1970, 1)

Through a grant from the Carnegie Corporation of New York local Centres of the University were therefore progressively established in each of the member countries of the University. In one of these countries there is now a sub-centre facility as well and there are plans for the establishment of more sub-centres as the need for access to University resources increases in the countries. In essence, each of the local Centres are extensions of the University infrastructure into the far corners of the University Region. Their main functions, among other things, are to:

- represent the University of the South Pacific in the member country and as such serve as a source of information about its scope, functions and activities;
- service the University's distance teaching programme; and
- organise any other activities including continuing and non-formal education services of the University in the member country.

Each Centre has a permanent structure and a team of administrative staff. Each is headed by a director who enjoys academic status. The Regional Centres network is co-ordinated by the directorate of the Extension Services.

THE EXTENSION SERVICES OF THE UNIVERSITY OF THE SOUTH PACIFIC

The Extension Services Department is the section of the University that is responsible for most of USP's outreach functions. The headquarters are located at the Laucala Bay Campus from where it makes the various services-resources of the University accessible to all members of the USP community. Extension Services activities can be described as mainly incorporating:

1. distance teaching activity which is the offering of the University's credit courses/programmes to distance learners in the member countries of the University region; and
2. continuing education activity which is the provision of non-credit programmes in the member countries of the USP-region.

DISTANCE (EXTENSION) TEACHING AT THE UNIVERSITY OF THE SOUTH PACIFIC

Next to on-campus face-to-face teaching in the traditional manner, distance teaching is the most significant way in which the University makes its services and resources accessible to as many members of the University community as possible. The main objective of the initiative is to enable those unable to attend full-time on-campus tuition either for financial or other reasons, to undertake University studies at home while in their jobs. From a very modest start in 1971, the distance teaching services of the University rapidly grew to comprise a major function of the USP. As a method of teaching, it was innovative and challenging for staff involved and ensured a more equitable distribution of the University's resources amongst a much wider cross-section of the University community.

The distance teaching function of the University is the responsibility of the teaching departments in the four Schools of the University. Essentially, teaching at a distance is the offering of credit courses of the various teaching departments in the distance mode.This incorporates the lecturer or lecturers in charge of courses, in association with other specialist personnel, preparing for their courses appropriate instructional materials including printed, audio and/or video components for students to study that course at a distance. These materials are designed to be self-instructional and intended to replace the need for the lecturer "in person".

In studying at a distance, though, students are not left on their own to work through their course materials and merely submit the required work for assessment. A distance learner works in close association with his nearest local USP Centre. The Centre has, inter alia, the responsibility of appropriately counselling and enrolling the student, servicing his/her study programme and providing him with all the necessary support services and encouragement. A Centre may, and very often does, arrange various forms of local tutorial assistance for its students as well. Sometimes marking and grading of students' work also take place at the local Centre although this function remains the overall responsibility of the teaching departments and their staff.

OTHER UNIVERSITY OUTREACH ACTIVITIES

Distance teaching activity clearly comprises a major part of the University's outreach operations but there are also several other significant ways by which the University makes itself accessible in the region. One of these is the Continuing Education activities of the Extension Services. This comprises all activities organised and offered by the Extension Services Department of the University that do not lead to a credit in one of the regular programmes of the University. It includes activities and programmes like:

- Workshops/seminars/conferences on a variety of socio-economic concerns affecting the region eg nutrition and health education etc.
- creative dancing, drama, art and writing etc, and
- pre-school teacher's training in which currently a Certificate level study is possible.

Another significant way in which the University extends its resources into the region is through the work of its institutes some of which are physically based in different countries of the region. Whereas the teaching departments within the four schools of the University concern themselves primarily with the teaching of the University's credit programmes, the institutes of the University concentrate primarily on research activity and the provision of consultancy services and performing only some teaching activity in their respective areas.

USP'S SATELLITE TELECOMMUNICATIONS FACILITY

When in 1971 the United States National Aeronautics and Space Administration (NASA) offered its Applications Technology Satellite (ATS-1) for free use to the peoples of the Pacific Basin in their socio-economic development USP was one of the first institutions to take up their offer. The potential benefit of the medium to the work of the University and specifically to its outreach effort was so promising that in 1973 USP applied to NASA for its own time on the satellite. Hence in 1974 the USP network (USPNET) was established which by 1977 enjoyed 24 hours a week transmission time on ATS-1. In 1984 through further assistance from the United States USP was able to progressively establish ground terminals in the various countries of its region.

ATS-1 however was an ageing weather satellite and transmission on it was quite often not the best possible. In late 1985 it began drifting and as a result became unable to cover the USP-region. After a year's lapse in satellite telecommunications USP was successful in negotiations with the International Telecommunications Satellite Organisation (INTELSAT) for the use of one of their communication satellites. Now (1987) with INTELSAT the University has access to 24 hours a day of satellite transmission time.

SATELLITE TELECOMMUNICATIONS IN UNIVERSITY OUTREACH

A fairly diverse range of University activities is being served by this satellite telecommunications facility. A major activity of course is distance teaching where the satellite is being used both for administration of the programme and teaching. In the administration of the University's distance teaching programme it is particularly effective allowing for regular meetings between Local Centre staff and Extension Services headquarters staff on a variety of day-to-day matters relating to teaching at a distance. As a teaching tool the satellite facilitates audio-teleconferencing enabling students and their tutors to meet and discuss matters of mutual concern regarding their courses and course materials. Apart from audio-conferencing facilities the satellite communications system also enables data transmission.

Beyond the functions the system also serves a range of other more ephemeral groups and organisations such as women's interest groups and librarians in their work in the region.

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Computer-managed learning in nursing education: an international adaptation project

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INTRODUCTION

Computer-managed learning (CML) as a major component in a distance learning program has been used successfully by Grant MacEwan Community College (GMCC) in Canada since 1983 to deliver a self-paced, individualized, re-registration program in nursing. The question arises whether countries with similar standards of professional practice could benefit from developmental work already done, and experiences gained in another nation. Curtin University of Technology (CURTIN) in Perth, Western Australia, and GMCC in Edmonton, Alberta, Canada, undertook to assess the implications of sharing a developed curriculum.

PROGRAM OVERVIEW

The re-registration program is designed to meet the needs of nurses who have been away from professional practice for a minimum of five years. Although all students completed a basic nursing program, they were a very heterogeneous group, varying in age, educational background and clinical experience. Some were employed in occupations other than nursing, while others had home responsibilities; both making it difficult to attend scheduled classes in metropolitan settings. Therefore, to meet student needs better, a flexible, individualized, independent study program was implemented.

Students commence the program at their convenience and begin by pre-testing to determine the route they will follow through the course of studies. Pre-testing allows students to progress quickly through familiar content and to devote more time to content less familiar. To proceed from one unit to another, the student must demonstrate mastery by taking a supervised test.

Although the flexible independent study program had advantages over traditional programming, inherent problems, such as lack of immediate feedback, delays in the mail systems and difficulty in scheduling communication with the instructor, all prevailed. To minimize these problems and facilitate more effective program delivery, CML was implemented at GMCC in 1983.

COMPUTER-MANAGED LEARNING (CML)

CML has several important features. It facilitates curriculum and course organization, stores test items and generates examinations, maintains all student records, is a means of communication between student and instructor and facilitates instructor management of the course. CML will accommodate various types of questions such as: multiple choice, true/false, short answer, problem solving/math and assignments. The assignment question is issued but not marked by the computer.

Tests are generated based on preset parameters. An instructor can dictate the test module, the type of questions issued and the duration of the test. Once these parameters are set, the computer randomly selects from a testbank of nearly 3000 items. The passmark and the number of attempts allowed are also set in a predefined manner.

CML will give the student immediate feedback. For questions answered incorrectly, the computer will give the correct answer, as well as the module and objective from which the question was derived. The computer keeps a record not only of the student's mark, but also of the date of the exam, the time expended in the examination process and the number of attempts at the examination. Instructors can view the test history of an individual student or the progress of an entire class. They can also obtain an item analysis and identify test items which need clarification or revision.

THE DECISION TO SHARE MATERIALS

From the onset of discussions regarding the possibility of sharing course materials, both institutions, GMCC and CURTIN, entered the negotiations with the realization that the process would involve course adaptation rather than course adoption. The question was "How much adaptation of the Canadian materials would be necessary, and would there be an advantage to sharing the curriculum rather than developing a separate course of studies for Australia?"

In examining the suitability of the course content, the first step was to review the conceptual framework upon which the Canadian materials were developed. The concepts taught within this framework all relate to the role of the nurse, the functions performed and the settings in which these are performed. It was, therefore, essential to ascertain that there was sufficient role similarity in nursing in the two countries to make it worthwhile considering content adaptation.

Based on previous experience, we were aware that projects demonstrating a significant degree of need were more likely to receive government and institutional support. Would this program serve to overcome current staff shortage? Would it be more accessible to the learner than existing programs? Would it serve any other learners, other than the group it was intended for? It was important to identify clearly the educational problem to be resolved. It was recognized that there were historical, cultural, ecological differences, as well as economic and political forces which affect health care and the curriculum.

The educational materials are primarily print-based. Audio-tapes, video-tapes, resource books, articles and the computer supplement the extensive print materials. While print-base in distance education is widely accepted, it is not necessarily the preferred method in all countries or with all groups of learners. The availability of resource materials and the compatibility of the technological systems were reviewed. Although Canadian video-tapes needed to be adapted to Australian standard, the mainframe computers of the two institutions were compatible and the software available was identical.

Adaptation of course materials, rather than development of similar materials, should demonstrate some advantages before the project is undertaken. It is reasonable to consider adapting materials when there is an economic advantage or when there are insufficient human resources to develop new materials.

THE PRE-IMPLEMENTATION PROCESS

When it appeared that the Canadian program could be readily adapted to Western Australia, GMCC assisted CURTIN with the implementation process. CURTIN appointed a project co-ordinator to work with the GMCC consultant. The co-ordinator has the responsibility for approval of all adaptations and therefore must have a sound understanding of the underlying course design.

One of the first tasks of the consultant and project co-ordinator was to obtain administrative and peer support. Interested faculty, within the university at large, as well as School of Nursing Faculty, had an opportunity to participate in an orientation session to the program. Administrators need to have an awareness at the onset of planning because they will have the responsibility of negotiating funding, space and equipment needed.

Stakeholders were involved early in the implementation process. This group of people have a role to play in the educational process but are external to the educational institution and the funding source. They can, however, provide the support required for program initiation and delivery. In Western Australia it was important to meet with all government health divisions, branches of allied health divisions, hospitals involved in previous programs, hospitals to be involved in the new program, the Nurses Board and the Nurses Federation. In addition those groups having the most urgent need for the program, such as the Council of Remote Area Nurses and Community Health Nurses, were also informed of the proposed course of studies.

Achieving this good communication network of informed people may be viewed as time consuming but it is essential to the success of a project. It is therefore important to identify the members of the network early in the project. Membership of this network will vary from country to country and institution to institution.

Following detailed networking, an implementation committee was organized to oversee the implementation process, and advise the project co-ordinator on matters relating to the adaptation process. Representation on the implementation committee will vary from country to country but in Western Australia the members represent government, health department, nurses board (registration body), instructional development and computing systems. Other members, such as specialists in specific content areas, will join the committe on an *ad hoc* basis. Consultation from GMCC is available during the materials adaptation and implementation phases.

The next step was to map timelines clearly. All tasks during the planning, adaptation and implementation phases were identified, and the length of time each task would take was estimated. It is essential to have the complete timeline depicted on paper, since often without such planning, steps can inadvertently be omitted. Project completion dates can be monitored more effectively when timelines are mapped.

Last but not least, when all networks were established and planning clearly detailed, a cost analysis of the implementation phase, with cost estimates for on-going delivery for a five-year period, was prepared and presented to funding authorities for approval.

CONCLUSION

Assessment of nursing re-registration needs in Canada and Australia, and the comparison of the standards of nursing practice in these two countries, demonstrated sufficient similarity to warrant the consideration of sharing of the curriculum. At the onset of discussions, it was assumed that there were differences in the historical, cultural, ecological, economic and political forces influencing health care within these two nations, and that the curriculum would therefore be adapted to reflect these differences.

There was no intent to adopt materials. The adaptation process will continue to be monitored and the outcomes documented.

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Vocational teaching at a distance
The New Zealand perspective

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THE NEW ZEALAND TECHNICAL CORRESPONDENCE INSTITUTE

NZTCI is charged to provide vocational education for all students within New Zealand who for various reasons find distance education more appropriate to their needs or cannot attend a class-contact institution. Our main purpose is to train, retrain and educate people for service in industry and commerce.

NZTCI is the largest teaching institution in New Zealand. We employ 500 full-time staff (400 teachers and 100 administrative and production staff), and we teach 34,000 students in 950 subjects, including trades, engineering, agriculture, horticulture, accountancy, law, banking and management. Although we are only one of 21 technical institutes and community colleges, our students make up about one-third of all vocational students enrolled in New Zealand.

STUDENTS AND ENROLMENT

The annual enrolment is about 34,000 students. They can enrol at any time of the year. The criteria for enrolment are that students must be over 15 years of age and reside more than 16 km from any class-contact institute offering the course. In spite of this 16 km restriction, about half of our roll consists of urban students, but they must first get clearance from the Principal of the class-contact institute in their district.

In general, our students are already employed in an occupation related to their course of study. About one-quarter are apprentices studying trades, one-quarter taking technician courses, one-quarter studying for a professional qualification, and the rest studying for various qualifictions at sub-professional level.

All students are part-time. Nearly a quarter are aged over 30, many of whom are upgrading their present qualifications. Women comprise only 20% of the roll, but this proportion is steadily increasing. The great majority of our students are studying for national qualifications which are examined externally to TCI.

COURSES

NZTCI provides vocational courses only. Almost all courses are directed towards national qualifications issued by various statutory bodies such as the NZ Trades Certification Board, the Authority for Advanced Vocational Awards, the Society of Accountants, and the Law Society. The bodies set the prescriptions and the examinations on which the institute bases its courses. In addition, NZTCI teaches courses to a small number of non-examining bodies and issues an NZTCI certificate to successful students by accreditation (for example, Royal NZ Federation of Justices). Most NZTCI students are studying for the same national examinations as those in class-contact institutes.

THE TEACHING SYSTEM

The printed assignment is the main method of instruction. Each subject of each stage of a course is covered by some 8 to 14 printed assignments. Most assignments are fully independent, textbooks being required only for supplementary reading. The course materials are planned, written, edited, illustrated and printed to be clear and easy to follow. Each assignment of a course is structured to resemble a series of classroom lessons — each with learning objectives, fully illustrated content and discussion, summaries of main points, revision questions and answers, and ending with questions designed to draw out the content of the assignment.

Students' work is given careful attention and is promptly returned with tutorial guidance and a set of answers. The whole system is based on self-paced personal instruction. Students study up to five subjects at a time. They can start at any time of the year and study at their own pace, within generous limits. Most examination prescriptions do require them to complete 80% of the coursework before they can enter for the examination.

THE DELIVERY SYSTEM

The NZ Post Office provides the delivery system through its comprehensive daily coverage of all districts. NZTCI materials are delivered by surface mail, normally taking 1–3 days to the most remote areas. Overseas students are serviced by airmail, paying the airmail costs. The institute pre-pays all surface mail both to and from students. Post Office charges to TCI amounted to $400,000 in 1986.

TEACHING THE PRACTICAL COMPONENT

The printed assignments are supported by other media. Students of many courses are required to attend laboratory or fieldwork courses or attend block courses in practical work each year in addition to their assignment work. As most of our students are employed in their field of study, much of their practical training is obtained by practical experience in an on-the-job situation. This practical skill gained in the course of their employment is supported in a variety of ways.

1. Trades students are directed to the nearest class-contact institute for a 3–6 week practical course in each of their 3 years of study. Having access to TCI course material, the local teachers can teach the practical work in a way that supports the TCI course material.
2. Technical and professional students, at appropriate stages of their course, are directed to the Central Institute of Technology to do their lab-work and fieldwork. The Central Institute of Technology is located in the Wellington area 10 km from TCI. It has the necessary residential halls and laboratory equipment to accommodate students. Some of these courses are run by TCI teachers and all students are visited by their TCI teachers while attending the practical course.
3. TCI holds some class-contact courses that do not require workshop or laboratory equipment on site at TCI.

Some students are required to complete practical aspects of their assignments in the workplace. Sometimes, larger companies collaborate with TCI to supplement its correspondence teaching. Correspondence work can be supported in the workplace in many ways, depending on the particular needs and circumstances of the employer's business.

TEACHER TRAINING

Almost all our teachers are recruited from industry or commerce. Few have had teaching experience and even fewer any teacher training. All newly appointed teachers are entitled to 6 weeks of teacher training. A training course for distance educators, developed at TCI, is administered by our Education Resource Unit. The course draws on the expertise of a number of experienced teachers within TCI. It is organised around self-instructional material, com-

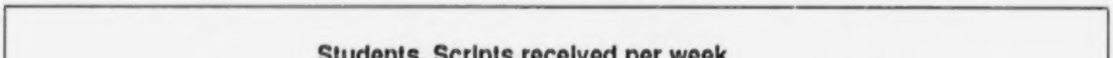

Figure 1.

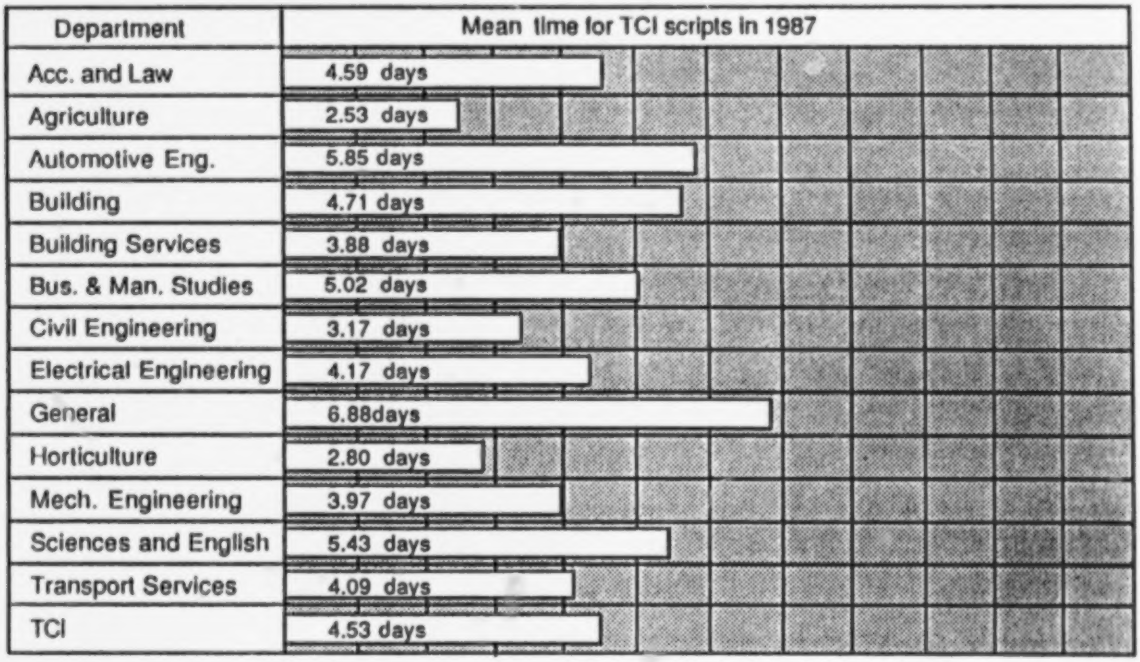

Figure 2. Turnaround time – working days.

bined with one-to-one support sessions and group workshop sessions. New teachers therefore study partly by the same medium with which they teach.

Our course is based on a series of topic-based modules. Each module, self-contained instruction on a distance education topic, takes some 30–50 hours of study time.

Each module is divided into 3–5 units of 8–12 hours' study. Each unit contains learning objectives, teaching material, and an assignment to be written and returned to the training staff.

With the modular design, we can use the modules both as the parts of the full course for new teachers and as single resource items for seminars, workshops or study groups with other teachers.

TEACHING DUTIES

Most NZTCI teachers need to be versatile. Over a period they will have marking duties, write new assignments, revise or amend existing assignments, and technically edit assignments written by colleagues. They may also construct an audio tape, teach at block courses or seminars, develop, and/or mark examination papers or represent the institute at meetings of trade or professional organisations. Many also serve on prescription committees for examining bodies. Each group of teachers is supervised by a course supervisor, who in turn is responsible to one of the 14 Heads of Department.

PROCESSING STUDENTS' WORK

Over 400,000 students' scripts are received each year. Figure 1 shows the weekly flowrate of scripts received through the year, and the five sample points for measuring turnaround time.

The graph shows that the minimum flowrate is about 1500 scripts/week during the Christmas period. Some teachers continue working through the Christmas period to keep the students in work. The flowrate builds to a maximum of 9600 scripts/week in April and runs at over 9000 scripts/week into October. These scripts are received in the mailroom, where they are opened and distributed to teachers.

Each script is given careful attention by the student's tutor. The script is marked, commented on, and an assessment of it is recorded. It is then passed to the assignment store, together with instructions on which assignment is to be sent to the student next.

The assignment store assembles a package of the marked script, the tutor's comments, sample answers, a new assignment, and a coded envelope on which the student will enter his or her address. The package is dispatched in the envelope which the student sent with his or her last script. This procedure keeps clerical work to a minimum.

Turnaround time, that is, the total time that a script is in the institute from its arrival in the mailroom to its dispatch from the assignment store, is monitored regularly. The following table lists turnaround time for 1987.

Turnaround time was measured in working days from receipt at records to dispatch from the assignment store. The average turnaround time in 1987 for the year to September is 4.53 days. Department turnaround time ranged from 2.53 days to 6.88 days. The turnaround time for 1986 was 4.30 days.

STUDENT CONTACT

In addition to the normal correspondence between students and teachers, students are encouraged to use the telephone to contact their teachers, and many call at TCI for informal discussions with their teachers.

WRITING AND COURSE PRODUCTION

NZTCI, being a teaching institution, does not set the prescriptions for courses leading to national qualifications. The examining bodies set them. NZTCI can introduce new courses only with the approval of the Department of Education.

When a new prescription has been approved, a course supervisor in the subject usually appoints a writer and a technical editor to draw up a writing plan for the course. The Second Deputy Principal considers the writing plan and may require it to be further discussed or amended before approving it.

The Second Deputy Principal is responsible for allocating writing priorities among the 14 departments and establishing the institute's annual writing programme. At present, NZTCI writes about 850 new assignments a year and amends about 1600. Present stock stands at just over 9000 different assignments.

Whenever the writing plan for a new assignment is approved, the writer has to complete the assignment draft. The draft may be handwritten or done on a wordprocessor. At present about 75% of drafts are handwritten and 25% prepared on computers using many popular software packages. When completed, the author's draft is examined by the technical editor and is checked by the course supervisor. The writer then discusses illustration requirements with the art editor.

The assignment is then logged into the production system and passed on to a specialist group of presentation editors. A presentation editor checks and amends the assignment to make it concise, clear and readable and with good teaching structure. After a check by the writer and any needed discussion with the editor, the assignment is typeset and illustrated. We use Apple Macintosh computers with Pagemaker and Microsoft Word software. Both proof and final copies are produced on a laser printer.

The typeset proof is checked by a specialist group of proofreaders, again checked by the writer, and corrected.

When the illustrations have been mounted in the final copy, the writer makes a final check. The assignment is printed on the premises. The printed copies are kept in the assignment store for issue to students.

Reprints are normally scheduled on a 12 month cycle, but master copies are amended continuously (about 1600 per annum). Our large well-equipped printing plant is capable of printing one million pages a week.

EVALUATION AND ASSESSMENT

Although NZTCI is not an examining authority, many examining bodies do not set examinations at the lower stages of a course. We are thus required to assess students' work. The teacher assesses every script submitted by a student and, at the end of the subject or stage, makes final assessment based on the records of all assessments. The final assessment goes to the examining bodies either as a final result or as a coursework mark as part of a final examination. In general, final results are used for lower or intermediate stages of a course and coursework marks are combined with the marks gained at final external examinations.

The external examination results conducted by the various authorities, at whatever level of difficulty, almost always show that distance education students from TCI have an average pass rate higher than the average for New Zealand.

The courses and teaching material are constantly evaluated by the Principal and senior management in response to feedback from industry and commerce as well as from examining authorities. This attention is clearly reflected in the examination results of our students.

IN CONCLUSION

We do not pretend that we have all the answers, and we acknowledge that we are only beginning to use the new technologies. However, we have learned much in 40 years, mainly through trial and experiment, and have developed a system that is cost effective and efficient. The main strategies of our system are

1. *Self-paced personal instruction:* Our students can enrol at any time, study at a time and place that suits them, and work completely at their own pace.
2. *Teacher training:* Our teachers, who are recruited from industry or commerce, receive 200 hours of training in a course designed for distance educators.
3. *Communication with students:* Our teachers are encouraged to communicate with students in a warm, friendly, personal manner. The turn-around time of scripts is monitored regularly — at present it is 4.3 days.
4. *The written word:* We believe that the written word is the most effective teaching medium, and we have concentrated on making our written assignments concise, clear, and readable.
5. *The practical components:* We recognise that practical training is vital in vocational work. We use a variety of methods: on-the-job training, laboratory courses, and a network of block courses at institutes throughout New Zealand.
6. *Evaluation:* Most of our students sit national examinations that are externally controlled, and senior management are constantly responding to feedback from industry and commerce as well as students.

N.Z. Correspondence School
The parents' association

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THE NEW ZEALAND CORRESPONDENCE SCHOOL PARENTS' ASSOCIATION ITS HISTORY, PRESENT ORGANISATION, ACHIEVEMENTS AND GOALS

The New Zealand Correspondence School Parents Association is a voluntary organisation with Branches throughout New Zealand. Membership is open to anyone interested in the work of the Correspondence School.

Correspondence school education has often been described as a triangular process.

Pupil
Parents ⟷ Teacher

therefore Cсrrespondense School parents are more closely involved in their children's education than other parents.

BACKGROUND

In 1936 a meeting of parents of Correspondence School pupils decided after consultation with the then Headmaster to form a Parents' Association with the aims of:

(a) The furthering of the personal relationships between parents, pupils and teachers.
(b) The practical encouragement of the school clubs and societies.
(c) The establishment and development of a school fund.
(d) The co-operation of the parents and teachers in every possible way for the welfare of the school and the pupils.

Twenty parents subsequently met the Minister of Education and gained approval for the formation of a Parents' Association.

During the past 51 years the Association has worked closely with the principals and staff of the Correspondence School and has continued to expand. It now has fifteen branches throughout New Zealand.

The Association is controlled by an elected executive of nine who must either have had a child enrolled with the school or supervised Correspondence School lessons for not less than three months. Membership of the Association is open to anyone interested in the Correspondence School. The subscription is kept very low and a grant from the Government defrays the Association's running expenses.

At present the Correspondence School is controlled directly by the Department of Education, and the President of the Correspondence School Parents' Association and immediate past president attend meetings of the Correspondence School's Standing Committee. When a Correspondence School Council is formed provision has been made for three parent representatives. Traditionally the Parents' Association has had direct access to the Minister of Education when important matters concerning the school arise.

PRESENT ACTIVITIES

In conjunction with the Correspondence School the Association holds an annual conference at the school in Wellington. All branches send delegates who have most of their expenses paid by the Association. In addition a small sum is paid to all families attending towards their expenses. The annual conference is considered a most worthwhile chance for families and teachers to meet, and to this end a social event for teachers and parents is hosted by the Association on the first evening. The following two days are taken up with a detailed report from the Principal, Branch reports, remits, a question and answer session on school related topics, workshops on previously selected topics and Biannual Election of executive officers.

Typical questions will be concerned with the teaching of specific maths topics, handwriting, the time a child will take to grasp a concept may cause concern. Parents gain great reassurance from sympathetic answers to their questions:

Workshops have been held on such topics as:

The reluctant learner.
Practical work for the secondary student
Early reading processes
Family relationships

Both parents and teachers from the school participate in these group discussions and all have found them invaluable.

While parents are in conference the teachers at the school entertain the pupils who have been able to attend, giving them a chance to see their school, meet face to face their own teachers and see the Capital City.

For those parents unable to attend conference, delegates report back to their branches and details of the question and answer sessions and workshops are published in "Mailbag" the news magazine of the Correspondence School.

The Association also hosts the annual school breakup ceremony which was originally broadcast and is now both televised live and broadcast. The Principal of the School and the President of the Association present their reports, a prominant personality is invited as guest speaker and usually the Minister of Education and the Opposition Spokeperson on Education speak with music being supplied by a choir of teachers from the school.

In the first term of each year the Executive of the Association meets in one of the branches, alternately in the North and South Island, enabling the executive to keep in touch with members who may be unable to travel to Wellington to the Conference. The Executive appreciates this opportunity to see the diverse activities of various branches.

The heart of the Parents' Association lies in the branches. Some branches cover a wide geographic area such as the southern half of the South Island, others comprise a small island or a large urban centre. A branch may be formed wherever a group of families wish to join together for activities. The National Executive offers advice and assistance to groups seeking to establish a new branch.

The Resident Teachers who live in eight different locations out of Wellington are the focus of branch activities. Each branch is self governing and raises its own funds. The branch members assist the Resident Teachers in organising School days, school weeks, camps and social functions.

For many families living in isolation either for geographic reasons or because circumstances such as sickness, this chance to meet with others in the same situation is most important. The feelings of isolation often felt by a family new to distance education when faced with what appears to be total responsibility for their child's education can be somewhat lessened by a telephone call from an Association member in their area.

School day activities range from a winter skiing day, factory visits, visits to museums, art galleries, sports days, boating, swimming, puppet shows, sea shore studies, music, folk dancing — in fact any school-related activity that is hard to carry out in isolation.

School weeks usually mean the pupils are billeted with an urban family for a week to attend a conventional school while the parent supervisor is free to observe teaching techniques as he or she may wish.

At Correspondence School camps the parents and pupils gather at a suitable venue with parents responsible for the cooking and other housekeeping details while the programme for the pupils is the responsibility of the Resident Teachers. Camps may have a theme such as swimming, art, or a foreign country, or it may be decided to have a variety of activities.

These school days, weeks, and camps provide the opportunity for parents and pupils to meet each other and life long friendships are often formed. Without these activities many children would have no chance to meet with their peer group, and the support that parents offer each other is enormous. Various exchange arrangements for books, clothes and toys have been set up by different branches.

At a branch level fund raising is most important. Raffles are always popular and succesful, as are bring and buy stalls, spellathons, disco evenings and sponsored walks. Funds so raised are used to defray branch expenses, assist families to attend conference, assist families in time of need, assist pupils attending the annual Residential School run by the Correspondence School, and assist pupils to travel to exhibitions of national importance.

The highlight of the year for all branches is the Christmas party held at the end of the school year. It provides a chance for families to show their gratitude to the Resident Teachers and the staff of the school for their untiring work during the year. Some branches prefer the traditional Father Christmas type of party while others hold a southern hemisphere barbeque. This function may be held in an Association member's home, on a beach, at a local school, or in a public park.

Some branches distribute a branch newsletter with a list of future activities, a buy and sell column, book reviews, and hints on school related matters.

ACHIEVEMENTS

In 1936 the first job of the Association was to negotiate successfully to have the Correspondence School placed on the same footing as other schools within the Department of Education with the Parents' Association as direct intermediary between school and the Minister of Education.

From 1938 visiting teachers from the school in Wellington were sent to the homes of pupils to help them and their parents with any problems that might arise. They were accommodated by families who transported them to the next Correspondence School home where possible, otherwise teachers had to find their own transport, be it packhorse, milk delivery vans or hiking. The Correspondence School Parents' Association fought for the use of public service vehicles and this was granted in 1949.

These visiting teachers proved so successful that the Resident Teacher Service was inaugurated in 1957, and subsequent lobbying by the Parents' Association has resulted in nine Resident Teachers covering the whole country.

When the original Correspondence School was demolished to make way for a motorway the Parents Association played a vital part in ensuring that a new custom built school was constructed in Central Wellington close to the railway station and bus service to assist families visiting the school.

In direct response to repeated parent requests the school now operates a tape recorder loan scheme for all full time pupils.

In 1975 parents made numerous requests for a preschool service for the younger siblings of pupils and in 1976 a pre-school section was opened. This now has over five hundred pupils.

Over matters of urgency, parents and pupils may now make telephone calls at the school's expense. This is a much appreciated innovation.

In 1986 the Minister of Education announced at the Parents' Association Jubilee Conference that he would instigate a "Technology Package" to include video recording booths, pupil computers and improved telephone facilities.

Since its inception the Association has held that parents of full time Correspondence School pupils should receive financial recognition of the work done in the supervision of pupils lessons. Various Ministers of Education agreed in principal, but it was not until the Break-up ceremony in 1986 that the Right Honourable Russell Marshall, Minister of Education announced that from the first term of 1987 parents supervising pupils enrolled with the school for reasons of distance from a school, or health would receive a small payment.

These achievements have not always been easily obtained. In addition to waiting on the Minister of Education, Association members have actively lobbied their members of parliament, written to the newspaper and enlisted the assistance of the Federated Farmers Association of New Zealand, the Women's Division of Federated Farmers and the Country Women's Institute, to mention a few organisations, to ensure that Correspondence School education should be the best possible education available.

The Parents' Association has donated:

A foundation stone for the new school
A hanging woollen tapestry
Oil paintings
Prizes
Books for the library
A visitors book
Funds towards a computer
A fountain for the garden.

GOALS

The Parents' Association has always worked in close conjunction with the Principal and staff of the School to ensure that the pupils of the school are provided with the best possible education. To this end the following are the priorities for 1987:

An increase in the number of Resident Teachers so that all families may receive at least one visit per term.

A reduction in the pupil teacher ratio in the primary school. The facility to set up further Correspondence School Units where a small group of Correspondence School pupils living close together can have their correspondence school lessons supervised by an untrained teacher paid by the Department of Education.

CONCLUSION

The Correspondence School Parents' Association is a unique body working in harmony with the Principal and Staff of the Correspondence School for the benefit of the pupils. Mrs. M.E. Jolly, President from 1955–1959, Mrs. K.M. Evans Secretary 1963–1978 and Mr. A.D. Dick President 1961–1981 have all received recognition of their work for the Association in the Queen's Honours List.

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The establishment and the development of the external degree programmes of the University of Nairobi

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HISTORICAL BACKGROUND

The first recommendation for the establishment of first degree by External Studies was made in the Kenya Education Commission Report (Republic of Kenya 1964 part I pp 105 and part II pp 35). Thereafter this idea featured in several Kenya Government Development Plans. (Republic of Kenya 1966–77 pp 165, 1979–83 Part II pp 185.) As these policy statements were being made by the government, the University College of Nairobi was making attempts to establish a first degree by external studies. In March 1965 the Academic Board of the University of Nairobi accepted in principle that the faculties of Arts, Science, Commerce, Art and Architecture could work such a degree. In February 1968 the Draft Regulations were discussed by Senate and referred back to the Academic Board of UON.

In February 1970 the Academic Board accepted the regulations and fee structure. Though the Development, Planning and Establishment Committee endorsed the proposal for the External Degree Courses to start in 1972, the University Grant Committee recommended that the programme could only be considered for mounting after 1975 (UGC Feb. 1972).

To provide a comprehensive basis for implementing the External Degree Programme, the University of Nairobi invited a team of experts from the U.K. Open University in July 1975 to carry out a feasibility study for offering first degrees by External Studies. Although their report was accepted it was never implemented due to the financial constraints facing the University.

However, with the continued increase in demand for university education and the inability of the internal departments to accommodate all those who meet the entry requirement, the government requested the University of Nairobi to look into the possibility of setting up External Degree Studies Programme. This was followed by appointment of a Task Force Committee on 21st June, 1983 by the Deans Committee to update the 1976 Open University report. It submitted a comprehensive report in August 1983 in a document known as "Report of the Task Force on Establishment of External Degree programme of the University of Nairobi". This report provided details on the structure, courses medium of instruction, support services, finances and administration of the programme.

STRUCTURE AND OBJECTIVES OF THE FACULTY OF EXTERNAL DEGREES STUDIES

The Faculty of External Degrees Studies has three departments: Education, Legal Studies and Business Studies. It is headed by a Dean.

The objectives of the External Degrees Programme are to provide:

- learning opportunities for the qualified Kenyans who cannot secure places in the existing internal faculties of the national universities.
- an alternative and innovative method of learning which is not limited to a particular time and space.
- an opportunity for people to learn at their own pace.
- much needed high-level manpower
- an opportunity to maximise the use of limited

educational resources by making university education available beyond the lecture halls.

PROGRAMMES AND CURRICULUM

The Faculty of External Degrees Studies has three main programmes addressing specific national needs. The first is *Bachelor of Education (Arts and Science) Degrees* programme. This degree programme intends to provide graduate teachers for the growing secondary level education which now has many non graduate teachers. It is being implemented in two phases. In the first phase the subjects offered lead to B. Ed. Arts degree. These subjects include Education, History, Religious Studies and Philosophy, Economics, Business Studies, Mathematics, Home Science, Music, Physical Education and Fine Art.

In the second phase the subjects lead to B. Ed. (Science) Degree. Subjects to be offered are Education, Botany, Zoology, Chemistry, Physics, Geography and Mathematics. It is planned to admitt to the B. Ed. (Sc.) in 1990. In both B. Ed. Arts and Science the student is expected to take Education and two teaching subjects.

The second programme is the *Business Studies Degree (BSD).* Graduates of this programme will meet high level manpower needs in private and public sectors. The subjects will cover various fields of accounting, and business administration and management. The planned date for this programme is 1992.

The third programme of the External Degrees Studies is the *Legal Studies Degree (LSD).* This programme is intended to service the private and public sectors by providing people who are qualified to advise on and assist in decisions involving legal matters. Other than those specialized categories, it will also produce some people who would go into Legal practice as advocates of high courts. This programme is planned to be mounted in 1994.

For all the programmes at the Faculty of External Degrees Studies the main medium of instruction is printed materials supported by face-to-face tutorials and audio cassettes.

Since students in this programme are part time, they do not have as much time as the internal students. To make it manageable each degree programme is divided into three parts each lasting two years. Therefore, studying for a degree in this programme takes a minimum of six years and a maximum of ten years. However, in exceptional cases a student may be allowed by Senate to complete the course in a shorter period.

The assessment in all the degree programmes, consists of continuous assessment and a written examination at the end of each part based on percentage grades. Continuous assessment which counts for 40% consists of written assignments, demonstrations, projects and timed tests. The end of year written examination counts for 60% of the total marks.

STUDENTS OF THE EXTERNAL DEGREES PROGRAMME

The students in the B. Ed. Degree (Arts) must meet the University entrance requirements of either "A" level passes or an SI or Diploma Certificate obtained from any of the Secondary School Teachers Colleges. Candidates must have been out of formal schooling or training for at least three years.

It is expected that when other courses are mounted, holders of professional certificates and diploma in relevant fields will be eligible for admission. The enrolment on the B. Ed. (Arts) Degree is 604 students registered in September 1986. These are enrolled under different subject combinations as given below:

Geography & Economics	69
Mathematics & Economics	38
Mathematics & Geography	7
Double Mathematics	137
Economics & Business Studies	106
Geography & History	52
History & Religious Studies	89
Kiswahili Literature	48
English language & Literature	58
	604

THE TEACHING SYSTEM OF THE EXTERNAL DEGREE PROGRAMME

Course writers have been recruited part-time from staff at the University of Nairobi and Kenyatta University. Training workshops have concentrated on giving these subject specialists the skills of writing for distant students. The training programme includes:

- Overview of distance education
- Characteristics of distant students
- Objective writing and use
- Developing outlines from subject syllabuses
- Content presentation and motivational instructional devices and
- Reviewing and editing study materials.

The training is practical and participants apply it immediately.

Completed materials may be reviewed by other subject experts to check on the accuracy of facts, principles and balance using a brief guide developed by

The projected student enrolment to the year 2000 is as follows:

	1986	1988	1990	1992	1994	1996	1998	2000
BED Arts	600	600 II	600 III	600 F	200 ?	100 ?		
BED Arts (B)		600 I	600 II	600 III	600 F	200 ?	100 ?	
BED Arts			600 I	600 II	600 III	600 F	200 ?	
BED Science (New)			200 I	200 II	200 III	200 F	100 ?	
BED Arts				600 I	600 II	600 III	600 F	200 ?
BED Science				200 I	200 II	200 III	200 F	100 ?
BSD				200 I	200 II	200 III	200 F	50 ?
BED Arts					600 I	600 II	600 III	600 F
BED Science					200 I	200 II	200 III	200 F
BSD (New)					200 I	200 II	200 III	200 F
LSD					100 I	100 II	100 III	100 F
BED Arts						600 I	600 II	600 III
BED Science						200 I	200 II	200 III
BBS						200 I	200 II	200 III
LAS (New)						100 I	100 II	100 III
BED Arts							600 I	600 II
BED Science							200 I	200 II
BBS							200 I	200 II
LSD (New)							100 I	100 II
BED Arts								600 I
BED Science								200 I
BSD								200 I
LSD								100 I
	600	1200	2000	3000	3700±	4300±	4500±	4750±

F = End of sixth year since enrolment.
? = Estimated number remaining in programme after 6 years.

the Faculty. Finally, the draft materials are edited to try and improve their communication strength.

Written assignments in each unit provide the opportunity for assessing how well the students follow the course. The subject experts are expected to provide feedback to the student through the comments in the assignments. Within the teaching system there is provision for face-to-face interaction between the students and the writers or tutors. A three day residential session was provided at registration in September 1986 and six months later in March 1987. At another two week residential session in September 1987 students took the first set of their part I examinations. During these sessions students are taught by the course writers and practicals are held.

In addition students meet in the regions in eleven study centres. The tutors at the study centres have been recruited from high schools and colleges. Their role is to assist by organizing discussion sessions on topics identified by the students. These tutors were given a one week seminar to help them understand the students and the tasks they were being asked to do. The programme included the following topics:

- Development and administration of the External Degrees Programme
- An overview of distance study approach
- Understanding the students
- The support services and their roles
- Tutoring in the Distance Study system
- Understanding the syllabus and the study materials
- Assignments and practicals: Management and uses
- Guidance and Counselling
- Programming and monitoring the tutoring process.

Out of the experience of the two training programmes organized for the tutors, a tutors' handbook has been prepared.

The third component of the teaching system is cassettes. The programme uses cassettes instead of radio because the numbers involved in the initial stages are too small to justify the use of air time. As working people the students would find it difficult to follow radio programmes anyway. The specific roles of the cassette programmes are one or more of the following:

- Supplementing the introduction to the course or unit given in the units and residential sessions;
- Highlighting important topics treated in the units;
- Providing concrete examples or case discussions to explain or illuminate abstract ideas discussed in the units;
- Addressing specialized areas that print cannot, for example sound demonstration in language study or dramatization in literature;
- Giving instructions for practical activities in addition to the manual;

- Providing some general tutorial and counselling services to students.

In producing the cassette programmes the Faculty organizes training sessions for the writers. The training workshops last one week, followed by three weeks of actual writing in workshop situation and cover the basics of script writing with emphasis on

- Role of audio in relation to learning needs of students and
- Learner involvement techniques in writing for the ear;

In the process of script writing the producers work closely with the writers in stages until a first final draft is produced which then becomes the model for the script writer. The ready scripts are then produced (recorded) in the studio and later dubbed for distribution to students. In most cases the voicing is done by the writers except where other voices are required. Some cassettes have accompanying notes or frames to guide the student activities. These cassette programmes have full instructions on how to use them.

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Distance education comes home: the decentralised learner comes of age

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INTRODUCTION

In the industrial age we go to school. In the information age school is coming to us. This is the primary message implicit in the media and movement of distance education.

Although distance education is too young as a discipline to have spawned clear trends, some things are certain. As technology and course content quality continue to improve, the ranks of distance learners continue to grow, lowering per student costs and attracting more attention and development capital. This in turn is helping to make distance education, originally developed for the geographically disadvantaged, a viable alternative for those who have traditional means of schooling available to them. In the coming years, the difference between those who must use distance education delivery, and those who would rather do so will become less and less pronounced. By the year 2000, the geographically dispersed "classroom" will be a frequent option in the educational community. Thus we are in the remarkable position of having a clear image of the future in our midst: today's distance education student can serve as a model of future information age learners, the new breed of students who will receive some portion of their schooling via cable, broadcast, satellite, phone or postal systems. By observing the distance learner of today we are looking through a portal into the future and seeing what we will become.

This assumes that distance education technology and delivery organisations will continue to grow and improve and squarely enter the market-place to form a competitive industry. There is no reason to doubt this will happen. In a sense it already has, under the auspices of commercial television. Given the omnipresence of network television, it is not surprising that children are spending more time being educated by TV than by school. Commercial television may not constitute school to the literal minded but it is a formidable teaching institution nonetheless.

In fact, the child in front of the television and the distance learner have much in common. In them we see the seeds of new trends in learning that promise to grow. More and more, individualised education. More and more, those who want the information usually acquired at school but on their own terms will use "traditional" distance education means to get it. More and more, school will come to us.

THE DECENTRALISED LEARNER COMES OF AGE

Accepting that "distance learners" do not necessarily live in remote areas, a redefinition of terms is needed. What we are talking about are dispersed, or decentralised learners. The word is hardly new or under-utilised. Techno-philosophers from Toffler to McLuhan have used it exhaustively to describe the fundamental shift from the industrial age to the information age in the way we work, play, learn and live. Note that it is the student body that is decentralised, while the teacher or provider of materials is usually quite centralised.

There are many ways to view or categorise the decentralised learner. The most appropriate for this paper is to do so based upon the three primary reasons that students are led to use "distance education media" in the first place:

(1) They have no other way to receive a state-sanctioned education due to geographic isolation. To many, these constitute the real distance learners. This category also included those so severely disabled and without support that they are essentially isolated from nearby schools.

(2) They would rather learn, or their parents would rather they learn, at home despite the traditional means of education available to them. I hesitate to use the term "home learner" because to some this term is as all-inclusive as distance learner is to others. The students in this category are often avoiding the socialization at the nearby learning institution. The most obvious example of this are those who learn at home in order to receive an education with a religious emphasis. Patricia Lines estimates that fully half of all home learners fall into this category (Lines, 1987).

(3) They want to expand their learning opportunities and resources beyond those immediately or

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traditionally available to them. Anyone can fall into this category, including those usually identified with categories (1) and (2) above. Typical examples are people who attend regular school but need a particular course not offered, or home learners who want to supplement their education by using any one of the number of services available, from mail courses to on-line video services, to video text. The courses they take are often called "enrichment" or "specialty" courses.

There is overlap among the three groups. No doubt there are geographically remote learners who would prefer a religious education and who want a speciality course such as Japanese. This overlap only serves to expand the number and broaden the profile of decentralised learners and provide extra incentive for "distance education" developers to bring school to us.

THE IMPLICATIONS

This shift from a centralised to decentralised student body has profound ramifications.

The potential student body is immense. Tax base is no longer the determining factor regarding what "a school" can afford to offer. Decentralised educational delivery is limited primarily by the level of interaction the teacher needs to maintain during delivery and by the transmission media, such as satellite footprints, cable routes, phone system, etc., most of which are vast. Such a large student body reduces the service per individual cost dramatically. It also allows education to continue to be developed in various flavours with specific foci. We should expect more educational television channels, videotext and video services with specific philosophies; we should expect everything from Christian fundamentalist programming with evolution-free science courses to science coursework developed by environmentalists which are anti-development in nature.

Student or parent control over education is greatly increased. The vastness of the educational networks is balanced by the fact that electronic teachers can be turned off at any time. The industrial age's counterpart, getting up and walking out of a class, was virtually unheard of. This ability to control one's education is in direct contradiction to the factory model which provided the design concept for public education. Factory owners realised that they needed a work-force that was capable of inordinate amounts of "sameness"; to show up at work at the same time on the same days and perform the same tasks in the same way, over and over. Public education was created to meet this need, training children in the spirit of this "sameness". In contrast, information age students will find themselves learning in different environments at different times at different paces, all of which conspires to promote individuality and undermine the power structure upon which the industrial age was founded.

As Anne Batey and Richard Cowell noted in Distance education: an overview "Distance education may force us to redefine what a school is" (1986). In fact, decentralised education allows us to reinvent what school is.

Although it will be easier for higher education to take advantage of the individualised, disciplined nature of decentralised education, the fact that electronic learning can be convenient, fun and effective, combined with new attitudes in parenting and the ability to work at home in a number of electronic cottage industries, may give birth to many different styles of schooling even in the lower grades. Like-minded neighbors will be able to form study groups for themselves and their children, using many of the educational services available to them as their basis. Guides or coaches, rather than teachers as we currently envision them, will facilitate such groups, monitoring and promoting student progress, while relying on everything from interactive laser disks to a live broadcast of a teacher in another classroom as the primary source of information for the courses they oversee. On-the-road technology (microcomputers, ever-smaller satellite transceivers) will disperse the student body even more, encouraging practicum-based education, with students travelling to the hands-on kinds of resources they need and reporting back to a distant teacher.

In the year 2000 we may well be choosing how much of our school taxes we will want to pay the school system and how much we wish to retain to spend on home delivery of educational materials and service. Besides providing access to equipment that is not affordable on an individual basis, such as chemistry labs, schools may become institutions whose most cherished aim is to deliver all of those services now considered secondary; sports, art, choir, socialisation opportunities and individual attention, the only kinds of activities which Glasser sees as currently succeeding in public education (Gough, 1987). The dominant home class format for older learners may well become two to three lectures a week attended at home via cable, satellite or video service and one seminar which the student attends in person at school or a local discussion group. In short, with school coming to us, we enter the age of the viable alternative to standard public education.

WHAT SHOULD WE DO NOW?

Three adjustments in attitude are of primary importance.

First, we need to better understand the psychology and the needs of the decentralised learner of tomorrow and we can do so by studying the needs of the distance and home learners of today. Perhaps it is because distance education is not yet considered mainstream that the psychology of distance education has not blossomed a great deal on its own. Seeing it as a model for future non-distance learners should provide the extra impetus needed. There is certainly plenty to explore. The needs of students who learn not only at a distance but, more importantly separated from a group of their peers and often under the supervision of their families or just themselves must be significantly different from those who have been cultivated in the industrial age model of centralised, norm-minded education. The psychology of the decentralised learner needs to be addressed as vigorously as education has addressed other special needs learners so that educators can develop the pedagogy for the future.

Secondly, we need to understand that education must become more co-operative on a number of fronts:

> between student and teacher. As it currently stands, almost all evaluation in the K-12 environment (and much in higher education) consists of teachers evaluating students, and not the other way around. This is a wonderfully illuminating remnant of the industrial age; rarely did the lathe operator critique management. Successful decentralised education will depend heavily on two-way evaluation to compensate for the information loss caused by the teacher and student not meeting face to face.
>
> among students. The information available in most subject areas will be so abundant that it will become necessary to teach students how to use a blend of information and human networks to pursue their studies and to prepare them to solve the complex problems faced in the information age economy.
>
> among different agencies responsible for providing education. Distance delivery systems will only become readily affordable if they serve a great number of people. Federal, state, and local governments, as well as private entrepreneurs, will benefit greatly by working together. Their co-operation will make decentralised education a reality for individual consumers not directly associated with a formal institution of education. However, a special sensitivity must be observed to the cross-cultural issues implied in wide area education delivery.

Thirdly, we need to encourage teachers to feel comfortable in the role of coach or guide rather than as boss and fount of all knowledge at the front of the class. In the same way that track coaches do not expect to outpace their fastest runners, information age teachers do not expect to be more factually competent than their students; in fact, they expect to learn from them. A teacher's level of knowledge will always be important, but more and more she or he will be called upon for wisdom, the kind that can't be tested by the National Teachers Examination, and that can only come from experiencing life as a human being and evaluating it as an educator.

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Distance education and national development: the case of the external degree programme of the University of Nairobi, Kenya

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INTRODUCTION

The possibility of expanding educational opportunity through the development of distance education programmes has long been recognized. Indeed, the recent worldwide rapid expansion of distance education is a concrete reflection of this important recognition. Kenya, which is a Third World country, has rather limited trained and skilled manpower but a frighteningly large proportion of illiterates and semi-literates. It is considered crucial to national development — and this since the 1960s — to encourage the growth and expansion of distance education as a practical alternative solution to the development of immensely expensive school and college formal education. Distance education in Kenya is not a make-shift alternative to proper schooling, but a cost-effective and meaningful alternative which is seen to reach large groups of people countrywide (Muller, 1987:29–30). This paper, therefore, attempts to give an overall view of education and national development, distance education, and the newly inaugurated external degree programme, in Kenya.

EDUCATION AND NATIONAL DEVELOPMENT

In many countries education has reliably provided an impetus for national development. In Kenya combating ignorance is one of the declared national aims along with the eradication of poverty and disease. The ruling party in its KANU Manifesto has, ever since independence in 1963, urged both individuals and groups (through the Harambee movement of self-help and self-reliance) to build and maintain numerous nursery schools, secondary schools, village polytechnics and institutes of technology across the length and breadth of the country (KANU 1983:9). All these self-help efforts in education have been prompted by the government's clear understanding that education plays a pivotal and catalytic role in enhancing national development. Uppermost in the government's thinking is that the nation's ability to foster overall social, economic and political development lies in the quality and quantity of its literate and numerate population. The Kenya population therefore needs to be educated for its full enjoyment of life on the social front; to meet the nation's manpower requirements on the economic front; and to create a solid sense of national unity on the political front.

In this regard, education and training have continued to be given a very high priority in the country's National Development Plans. The production of sufficient numbers of secondary and university graduates with the required skills, knowledge and expertise for filling middle and high level positions to prop the modern dynamic economy remains a challenge to educational planners in Kenya (Tostensen and Scott, 1987:74–5).

Indeed, in consideration and in pursuit of the conviction that a satisfactory general level of education is a necessary pre-condition for growth and well-being, the government has attempted with the 8-4-4 System of Education — eight years primary, four years secondary and four years university — to broaden the educational system so as to create opportunities for various specialized training to prepare the youth for all types of tasks (Kenya, 1984:v-vi). Tremendous expansion, given the nation's limited financial resources, has also been undertaken at the primary, secondary and university levels of the educational system. Thus in 1963 there were 6,058 primary schools with an enrolment of 3,931,500. Also, while in 1963 there were 150 secondary schools with an enrolment of 28,764, in 1980 there were 1,626 with an enrolment of 410,026. Finally, while in 1963 the University College, Nairobi, had a student enrolment of 571, by 1980 it was a fully fledged university with a student population of 6,870. In the meantime, the cost of education to the National Exchequer has been rocketing, from K£6,961,000 in 1963 to K£122,583,000 in 1980 (Kenya, 1981; 1982).

DISTANCE EDUCATION

By 1980 the Ministry of Education was taking the lion's share of the National budget, at 34.9 percent of the total recurrent expenditure. Cost-effective educational alternatives needed to be found. One such alternative was distance education, where Kenya's experience dates back to 1967. In that year the government established the Correspondence Course Unit (CCU) within the Institute of Adult Studies of the University of Nairobi. To initiate the project, the Government of Kenya received financial assistance from USAID. The CCU immediately embarked on adult courses; 90 percent of the beneficiaries were primary school teachers in search of higher teaching qualifications. Others who benefited were clerks, farmers, housewives, members of the Kenyan Armed Forces, the Police and Co-operative staff throughout the country (Kinyanjui, 1981:83).

In 1969 CCU together with the Kenya Institute of Education (KIE) undertook to run a joint programme for untrained primary school teachers. The programme was aimed at improving the teaching effectiveness of those who had been recruited as untrained teachers after completing four or six years of secondary school. This training was provided through a combination of correspondence courses, radio programmes and face-to-face instruction during short residential courses when the would-be teachers were on their school holidays. The untrained teachers prepared and sat for the Kenya National Examination Council (KNEC) examinations in order to be awarded their teaching certificates. By 1987 15,000 untrained primary school teachers had successfully finished the relevant courses to be awarded their professional teaching certificates (A correspondent, 1987:13). Considering that 30 per cent of the 140,000 primary school teachers in Kenya are unqualified, it is easy to realise the importance and significance of the step taken.

To date CCU (since renamed the School of Distance Studies (SDS)) has a total of 9,200 students enrolled in its three year Foundation Course in Adult Education for those intending to teach adults, 4,200 students in its three year In-service Course for Untrained Teachers for those teaching in primary schools; and 2,000 adult students undertaking other general and professional continuing education courses for those who are not in the teaching profession (Gatere, 1986:6). These courses include some in book-keeping, commercial arithmetic, accountancy and other vocational studies. Over the years, the SDS learning media and the methods of student assessment have been boosted to include study guides, textbooks, continuous assessment, teaching practice, with support services from administrative and supervisory personnel in government centres in the country (A Correspondent, 1987:13–14).

Thus, from its very meagre beginnings the Correspondence Course Unit has risen to become College of Adult and Distance Education (CADE) comprising an Institute of Extra Mural Studies, an Institute of Adult Studies, a School of Distance Studies and a Faculty of External Degree Studies, whose activities are supervised and co-ordinated at the Kikuyu Campus of the University of Nairobi. The primary objective of these departments of CADE is to educate the large majority of adults who were denied higher education opportunities during the colonial circumstances. The CADE courses are tailored to the educational needs of adults, in that they are applicable to their daily lives. Accordingly, the stated objectives of CADE are: helping to create a better understanding between the highly educated minority and the majority of the people; helping individuals to raise their levels of academic standing; helping to create an informed public opinion; helping to enrich the cultural life of the rural areas; and engaging in research into all aspects of adult education and training (University of Nairobi, 1985:98).

Evidently, these are ambitious objectives and they require a highly efficient system of selection, planning, development and preparation, together with a well-organized operation network and the necessary machinery, to ensure that those aims are attained. Large amounts of teaching materials and equipment for printing, binding, radio recording and production studio are needed in order to handle the demands of distance education effectively. Using what has been available the performance of SDS students in national examinations has been comparable to, if not better than, that of school candidates sitting the same examinations. However, there has been 15 to 25 per cent drop-out rate by SDS students. To arrest this drop-out trend the college has undertaken evaluation studies and research, resulting in the much needed feedback from its students (Kinyanjui, 1981:86).

EXTERNAL DEGREE PROGRAMME

Nevertheless, the SDS experience has gone a long way to show that once the operation machinery of distance education has been established it can be a cheap and cost-effective means towards satisfying the urgent academic and professional needs of a developing country like Kenya. Consequently, with the experience gained from the SDS, CADE has finally ventured into offering undergraduate degree courses. The Bachelor of Education (B.Ed.) Arts degree course launched in 1986, with some British assistance in terms of personnel training, hopes to gain from the experience of the SDS by using a combination of different media — correspondence materials, radio and short residential sessions — to produce credible graduates, but at a distance (Omari, 1986:3). This is a milestone towards meeting the national middle and high level manpower needs of the country even though, initially, the external degree programme will aim to produce graduate teachers for the country's increasing number of secondary schools.

Out of the 19,368 teachers working in Kenya's secondary schools only just over 5,000 are graduates and 5,706 more are non-graduate, but otherwise qualified teachers. The balance of 8,648 is made up of "A" level school leavers, many of whom satisfy the minimum university entrance requirements, but cannot immediately find places in any of the institutions. When the university initiated the external degree programme and invited applications over 3,000 applications vied for the 600 places available (A Correspondent, 1986:14). The B.Ed. arts degree started off with Education, Mathematics, Geography, Economics, Business Education, History, Religious Studies and Philosophy, English Literature and Kiswahili. To complete the implementation of the B.Ed. Arts programme special subjects like Home Science, Music, Physical Education and Fine Art will soon be offered. Over the next four years B.Ed. Science, Legal Studies, and Business Studies will be introduced. What is more while it costs the government K£6,000 over a three year period to produce one B.Ed. graduate it costs K£850 over a six year period to produce a comparable graduate through the external degree programme (Education Correspondent, 1986:14). This will therefore, be an enormous saving while also being a qualitative and quantitative improvement of secondary education throughout the country.

CONCLUSION

The distance education activities in Kenya over the last two decades have been extended to meet the needs of elementary and secondary schooling and even those of university education. This has been a tangible and remarkable achievement in expanding educational opportunities within the Third World. In particular the inauguration of the external degree programme by CADE will help fulfil the dreams of many qualified candidates who had otherwise given up hope for university education. This is only a beginning, but a promising one that augurs well for a fuller utilization of the enormous potential of distance education at university level in Kenya.

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Textual design and student learning

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INTRODUCTION

Educational development and research in distance education quickly focuses on the important role of the printed Study Guide and how adult students learn using their Study Guide. Given the resources invested in the production and use of study material the most basic question arises: how can printed material be enhanced to improve the student learning? Within such a simple sentence are complex issues covering the areas of textual design and adult student learning. This project reviewed research in these areas and set up an experimental design to test the impact of textual design on student learning.

RESEARCH AIMS

This project had a number of interrelated aims:

(i) to extend our understanding of how students learn in distance education and explore theoretical perspectives on the use of printed Study Guide materials

(ii) to study the four major textual components of printed Study Guides and examine how external students are aided by these

(iii) to improve distance teaching practices and techniques through textual design

(iv) to devise a methodology of formative evaluation to improve printed Study Guides in distance education. This included the testing of the Study Protocol Recorder (SPR) microcomputer technology to analyse students' use of coherent whole blocks of texts.

This project was supported by a Research Grant from the Australian and South Pacific External Studies Association. It also expresses appreciation to Daryl Nation, Senior Lecturer in Sociology, Peter Farago, Senior Lecturer in Politics, and their students at Gippsland Institute for their cooperation, and Robyn Benson who was Research Assistant for this project.

The Study Protocol Recorder.

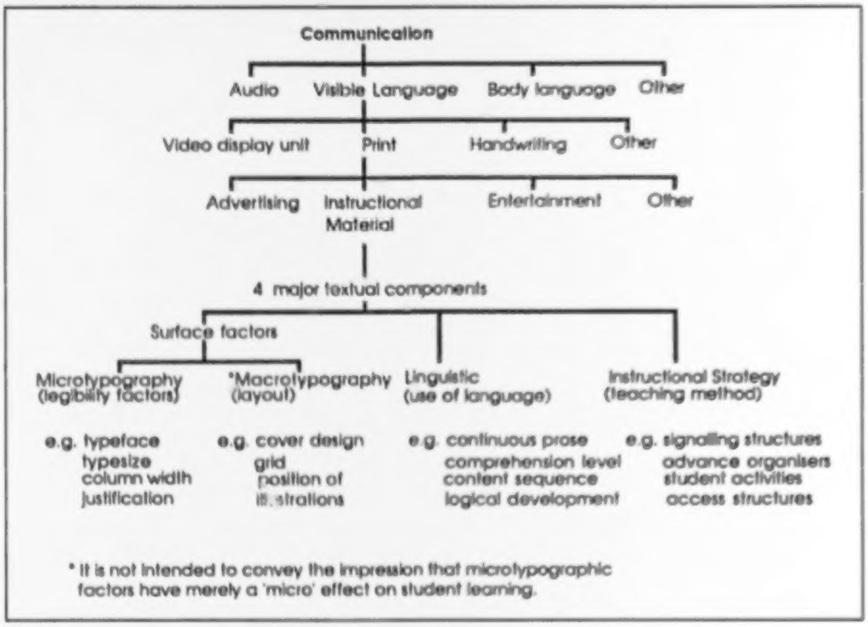
Communication
Audio
Visible Language
Body language
Other
Video display unit
Print
Handwriting
Other
Advertising
Instructional Material
Entertainment
Other
4 major textual components
Surface factors
Microtypography (legibility factors)
*Macrotypography (layout)
Linguistic (use of language)
Instructional Strategy (teaching method)
e.g. typeface
typesize
column width
justification
e.g. cover design
grid
position of illustrations
e.g. continuous prose
comprehension level
content sequence
logical development
e.g. signalling structures
advance organisers
student activities
access structures
* It is not intended to convey the impression that microtypographic factors have merely a 'micro' effect on student learning.

Table 1.

The full report of this project is available from The Centre for Distance Learning at the above address.

METHODOLOGY

The project used the SPR, questionnaires and interviews to evaluate students' use of whole texts and concentrated on four major textual components. The aim of the SPR was to analyse students in real time as they were using their Study Guides and to allow an analysis of the complex of textual, linguistic and instructional components rather than a single variable such as font, typesize, leading, headings, illustrations or in-text questions. The SPR is operated by photo electric light sensors that record page movements. Each page needs to be marked and placed in a special frame so that the activities can be recorded via the photoelectric cells into the computer. A special software program was written for this purpose which allowed variables to be modified. The SPR, which is illustrated below, enables a record to be made of the time spent on each page of a text and, of even greater importance, of the pattern of page usage.

Twelve external students were monitored with the SPR that was connected to an Apple 2e computer and recorded their page by page activities in forty-five minute blocks of study that simulated their home environment. They completed the Lancaster Inventory and Biggs' questionnaires and were then interviewed about their interaction with the study material and their study methods. The printouts, their questionnaires and the audio recorded interviews were matched with the Study Guides. This data was then analysed in the methodological context of the process of their study, the quality of their perceived learning outcomes, and the value of textual elements of the study materials and deep and surface learning, and their exam results.

Four Major textual components

This project built on the broad spectrum of the four major textual components as outlined by Waller, Driver and Parer (1982). These were as shown in Table 1.

IMPLEMENTATION OF THE PROJECT

Two Gippsland Institute units were selected to represent the differences of instructional and graphic design, namely Sociology One (Unit number 6120) and Modern European History (Unit number 6185).

Unit 6120 had a lecturer committed to instructional design principles, who rightly considered himself the instructional designer of his own study materials and sought advice from the design studio and the External Studies Division in preparing his study material. These materials were among the first to be phototypeset. It had three levels of headings, dots to highlight sections, and the text was unjustified.

Unit 6185 on Modern European History, and in particular the week on Marxism and Socialism, was typewritten and set out within paragraphs numbered 1 to 4. Number 3 was missing through a typist's error and the other sections were subdivided, namely No 1 into A and B, with B subdivided into Roman Numerals i to v. Section 2 was subdivided into sections A through S and Section 4 was simply divided A and B with a single reference in A, and 10 references under B. By any standard they had minimal instructional and graphical design.

Students were asked to make two hours available which was divided in the following manner:

15 min.- Introduction to the project and explanation of procedure
15 min.- Completion of Lancaster Inventory
45 min.- Study period monitored by SPR
15 min.- Completion of Biggs' questionnaire
30 min.- Taped interview on topics relating to the study period, focusing on aspects of textual design and the way the Study Guides were used and the students' perception of their approaches to study.

LITERATURE REVIEW

This project undertook a literature review in the following areas:

A Textual Design Research
B Distance Education and Textual Design
C Protocol Analysis and Eye Movement
D Student Learning — Approaches to Studying and Study Process

RESULTS

Textual design and student learning

All students surveyed showed some awareness of what is involved in a deep learning approach according to responses on the Biggs' questionnaire. However, in most cases it was combined with substantial use of a surface approach. The combination of approaches seemed to influence the way the Study Guides were used and was determined by such factors as familiarity with the student role, study skills, availability of time, and purpose of study.

Dependence on the Study Guides was evident from all types of students and comments such as:

"They're my main source of study" or
"If I didn't have those, I'd be lost"

were frequent across the range of students. Greatest use of them appeared to be made by the students who were most deeply involved in their study:

"They get really thumbed through by the time I've finished with them";
"Once you've finished, you haven't finished because you're always going back";

but there were also the students who tended to be less concerned with textual design:

"I don't think I need to have it thrown at me".

These students also made heavy use of other material, were well organised in their approach, and stressed the importance of utilising other means of facilitating learning.

The construction of the Study Guides was important but the need for explicit guidance, particularly in study skills, and the need to supplement the Study Guides with other means to gain learning, was just as important:

"Study Guides by themselves are hard work".

Eleven of the twelve students took notes, highlighted or underlined as they studied, the extent of this often increasing with increased use of a deep approach. Almost invariably the role of note-taking was seen as intrinsically related to learning:

"I give more time for my mental processes to find connections with my mental structure";
"It's as if my perception of something comes more from the hand than the eyes";
"By writing things down it sticks in my memory a lot more".

Notes tended to be more extensive if the area of study was new, and progress through a Study Guide was also slower. Subsequent use of the notes varied: sometimes they became the main resource for further study, but sometimes they were discarded once written — it was the process of writing, not the product, that was of value.

ANALYSIS OF TEXTUAL DESIGN FACTORS

Microtypography

These twelve students seemed barely aware of microtypographical features of text. The existence of white space and margins was valued by some students, primarily because they were useful for note-taking — not because they affected perception of the text. Comments mentioned the need for print to be of a "comfortable" size, the avoidance of "crammed up" text, the provision of white space in the Study Guides for note-taking and the use of wide margins to facilitate note-taking. Other relevant comments were made: for example, fine print is fundamentally hard to focus on, especially where there are groups of difficult points because they're very close together; the use of bold type to pick things out; headings where relevant and upper case letters; underlining of key words or expressions if they need to be understood in a particular way.

While the appearance of text does seem to have some influence on students, they are not aware of being greatly affected by the microtypography.

Macrotypography

The Study Guides are seen as the main source of study and as long as the Study Guides are reasonably clear, textual components did not appear of major importance. The use of well-organised and broken up text was mentioned by all students. The techniques used to divide the text did not appear to be of major significance, as long as the break-up was logical: some examples are: clear setting out achieved through the use of headings; careful spacing of information; and underlining to indicate which words to concentrate on. Headings were particularly helpful, for example, the use of headings along with underlining of key words, the use of headings as organising devices. The use of verbal devices was important when special meaning was to be given to words, although non-verbal devices were often considered sufficient. In some instances references to organising devices or logical break up suggested that instructional strategy or linguistic characteristics were of more significance in achieving this than macrotypography. Nearly half of the students considered the inclusion of diagrams/graphs/tables in the text important for stimulation and to add meaning. For example: a graph tells you more than reading; the use of diagrams for clarifying the components of ideas; the use of photographs or illustrations for stimulation; the use of pictures, diagrams and graphs to help explain the subject. Tertiary students however are past the need for illustrations for appearance. Introductory information was the next most frequently mentioned characteristic. Its importance to some implies that a carefully conceived and presented introduction should be provided to each Study Guide to ensure that it is meaningful to students who have no prior knowledge of the material.

Linguistics

Language was important, meaning a writing style that isn't too intellectual or too jargonistic and uses simple language, particularly for first year students. Lucidity was stressed as necessary to lead in to a topic and make it less daunting. Students liked a sense of personal communication and an informal approach, as opposed to coming in cold with a text book. They wanted an explanation of jargon as comprehension is inhibited and time wasted by terms which are not readily understood. They wanted terminology which does not obscure meaning. A little bit of lightness in life calms your mind, possibly, and does not hurt in any situation. The comprehension level and content of introductory information was particularly significant. Most students referred to introductory information although for some it did not have meaning until the remainder of the text was read. Comments relating to introductory information, content sequence, headings and key words often seemed to refer to both linguistic content and instructional strategy.

Instructional strategy

Although it was often difficult to interpret whether students' comments on textual features related to instructional strategy, linguistic or macrotypographical factors as noted above, it is true to say that instructional strategy did influence the response of all students to the text in one or more ways. Such features mentioned were the appreciation of introductory information, the organisation of material and the use of headings and highlighting cues. Students referred to the need for complete information on a topic to be included in a Study Guide. Students felt that the Study Guides should contain complete information on all necessary study materials — given their limitations in time and resources; this was less the feeling of the really deeply involved students. Informality of language and the use of white space was mentioned by the deep learners who tended to value it for note-taking. Also important were the cross-referencing, the provision of summaries at the end of sections and the need for tasks to enhance learning placed within the text, as well as the use of additional techniques such as study groups, taped lectures, video tapes, the availability of general study skills information, prompt despatch of study materials and assessed assignments from the Institute. The above are illustrated by such examples:

- Paragraphs organised with topic sentences at the beginning to facilitate skimming and allow for a rapid overview of the content.
- A gradual introduction with introductory information to guide the student into each topic, the provision of a simple, introductory overview of a topic, along with suggested introductory readings on a similar level and explicit guidance from the lecturer.
- A clear structure, with initial provision of instructions and an overview of a topic, and with precise cross-references between topics and Study Guides to save time, the careful structuring of points so that each point contains only one idea or element, the provision of sufficient information, written in such a manner that a basic understanding of the subject can be obtained from the Study Guide, including the nature of and relationships between concepts important to the topic.
- Advance organisers to map out the area to be covered, and a setting out which is logically ordered and clearly signposted.
- The provision of cues which indicate special significance for words or sections of text.
- The use of devices — not necessarily verbal — to divide up the text.
- Division into small paragraphs introduced by letters or numerals only when it does not interrupt the logical flow.
- Division of topics into a clear and simple sequence of sections, cumulatively ordered and with cross-referencing, logically ordered paragraphs with separate points and ideas clearly distinguished and possibly numbered.
- Inclusion of library reference numbers in reading lists to save time.

- Provision of a summary at the end of each Study Guide.
- Reduction in the volume of reading required, if possible, taking into consideration the above organisational factors, references back to material in previous sections as students upgrade their knowledge.
- The provision of, ideally, a lecture or at least a video or audio tape, prior to reading the Study Guides.
- The use of tapes.
- Use of readers providing key readings for the subject. This appears to have particular merit due to difficulties encountered in obtaining prescribed references.
- The use of references within a text to expand on the summary of ideas presented in the Study Guides.
- The incorporation of student tasks which develop meaningful interaction with the subject matter, and the use of complementary techniques, linked with the Study Guides, to reinforce learning.
- Provision for students getting together to study to allow interchange of ideas.
- Provision of an in-depth seminar on study techniques for mature age students at the beginning of the course to explain what you're supposed to be looking for and how to get the meat out of the subject and ignore the irrelevant bits.
- The importance of other support from the Institute such as the provision of Study Guides before lectures, prompt provision of study materials, and the return of assignments well before the next one is due.

CONCLUSION

A combination of micro, linguistic and instructional components within Study Guides do influence students. However a broad range of design features is acceptable. The very existence of a Study Guide is most important, but no dramatically obvious indications for textual refinement appeared. Students were able to compensate for the lack of design features when the language had simplicity and lucidity and was presented in well organised blocks.

The most appreciated design characteristics were the subdivision of material into coherent blocks and carefully constructed introductory information. Among the most useful design features was the clear and logical use of language.

Those in External Studies Divisions and within instructional design tend to see distance education through the focus of the Study Guide, offering the prime direction and stimulus, and through the focus of efficiency of production and delivery of study materials. There is no doubt that these are important, but perhaps in the manner of Hersberg's hygiene factors, in that they emerge as major issues when the study materials are grossly deficient or when the production and delivery systems break down. No amount of well-designed Study Guides or efficiency in production and delivery systems can substitute for a supportive relationship between the student and the academic teacher. The mature students in this study had a wholistic view of distance education that encompassed not just their Study Guides, but included their personal, academic or achievement orientation to study, the intentions of the lecturers, the support provision offered with tutorials, communication and direction by the individual lecturer, and the support offered by the institution through library and computer services, adequate tutors to mark assignments for good turn around time, adequate course offerings and so on.

From the wholistic perspective the mature students were less aware and interested in the details of textual design and more interested in the substance of the educational product offered by the institute and the teacher. While there is no doubt that resources to improve the textual design of Study Guides will facilitate the students' learning, this should be seen as an aid and not a substitute for either the relationship established between the academic teacher and the student or for other student support provisions.

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The economic cost analysis of STOU radio programmes*

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This paper presents the economic aspect of radio programmes used by Sukhothai Thammathirat Open University (STOU).

Before analyzing costs, it should be noted that radio programmes at STOU are a supplementary medium of instruction to help students understand a particular concept. They are not intended to be a substitute for written materials. Students are expected to spend up to 70 percent of their study time on printed texts and 30 percent of their time watching television programmes and/or listening to radio programmes (Srisa-an and Wansotorn, 1986). Theoretically, students can pass the examination without ever listening to the radio or watching the televised lessons.

However, the majority of STOU students are using the radio (61 percent). They appreciate STOU's integrated learning package comprising printed material with radio programming (60.2 percent). A substantial number of students (45.1 percent) have said their studies would be adversely affected if radio programming were discontinued (Fry, pp. 89–91).

Radio is therefore an integral part of the STOU system and a very important medium, especially for the large number of students residing in remote areas, possibly without access to television.

On the National Education Radio Network, STOU has the largest allocation of transmission time (37.6 percent). So it is of special importance to evaluate radio programme costs and radio's impact on higher education in Thailand. This paper will present the cost aspects only.

COMPONENT COSTS

Radio programme costs can be separated into 3 major components: 1) programme production costs, 2) administration costs or costs for coordination and operation and 3) transmission or broadcasting costs.

1. PROGRAMME PRODUCTION COSTS

In STOU radio programmes supplement and reinforce written materials. Texts and practice books would have to be developed regardless of whether or not radio is used as a supportive medium. Therefore, the development of scripts is considered to be the only effort required prior to the production of the radio programmes in recording studios.

Table 1 presents production costs for a 20-minute radio programme and includes only the costs involved in developing scripts for the programme plus the costs of recording and editing. Programme production costs are composed of two major parts:

1.1 Annualized capital costs which include the costs of construction of the EBPC (Educational Broadcasting and Production Centre), land, studio equipment, telephone start-up, furniture and office equipment. The annualized capital cost is estimated to be 8.7 million Baht** or 24,234 Baht ($969) per programming hour (Table 1).

1.2 Recurrent personnel costs, for script development, recording and editing, are estimated to be 5,787 Baht. ($ 231) per programming hour (Table 1).

The estimated total cost of production per programming hour per year is 30,021 Baht ($ 1,201).

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* *In the period 1979–1985, the National Education Commission of Thailand, which had the responsibility for the summative evaluation of the Radio Education Project (REP), one segment of the Fifth World Bank Education Loan to Thailand, undertook the summative evaluation of REP by having Tony W. Bates, Steven J. Klees, Gerald W. Fry and Louis K. Woo as consultants to the project at different periods. The author of this paper was a member of the Sub-Committee on Evaluation of the REP and worked as their counterpart, especially on STOU radio programmes. The information in this paper is based on the consultants reports, especially those of Louis Woo and Gerald Fry.*

** *US $ 1 = 25 Baht.*

2. COORDINATION AND OPERATION COSTS OR GENERAL ADMINISTRATION COSTS

These costs are assumed to be a fraction of the total recurrent budget of STOU. This, of course, includes materials, supplies and the utility costs which are excluded from programme production costs. The costs for coordination and operation are estimated to be 17,055 Baht ($ 682) per programming hour (Table 1).

3. BROADCASTING COSTS

The Public Relations Department (PRD)* is responsible for the technical operation of the National Educational Radio Network (NERN), but there is also a Programming Board, representing PRD and the various educational agencies using the network. Through this Board STOU has been allocated 50 hours/week for the broadcasting of radio education programmes. This constitutes the largest block of time on this network. Transmission costs per hour are estimated to be 18,230 Baht ($ 729) and consist of capital costs of broadcasting and recurrent costs of operating the 11 stations and the central office.

3.1 Capital costs include land, construction, facilities, vehicles, equipment, telephone start-up, training and technical assistance. Land cost is defined as the opportunity cost of land used by each station assessed according to its 1985 market value. Construction consists of site preparation, access road, fence, irrigation system, power system, transmissions buildings, office buldings, power house, staff accommodation. Facilities include office furniture and equipment. Telephone start-up costs are a once-only cost, namely, costs of installation.

Summing up all the capital investment categories, the annualized cost of such investment is estimated to be 102 million Baht or $ 4,080 million (Woo, p 9).

3.2 Recurrent costs for operating the 11 stations and the central office include all wages, their related fringe benefits, overtime, perdiem, travelling, office supplies, maintenance, utility and service costs paid to the Telephone Organization of Thailand for the maintenance and operation of the UHF links to the 11 stations. The average annual recurrent cost, assessed at 1985 value, is 21.4 million Baht. Given that the total number of broadcasting hours per year is 6,795 hours, the average annual cost per broadcasting hour is 18,230 Baht ($ 729).

4. TOTAL COST OF STOU RADIO PROGRAMMES

The total annual cost per hour, which is the total cost of programme production, general administration and broadcasting of STOU radio programmes, is 65,306 Baht ($ 2,612) if the programme is broadcast only once. This is the fixed cost since the cost will not vary according to the number of listeners (Table 1).

Table 1. Estimated Total Annual Costs of Production, General Administration and Broadcasting Costs for STOU Radio Programmes

	Cost per programming hour	
	(1985 ฿)	(U.S. $)
Production Cost[1]	30,021	1,201
Annualized capital cost[2]	24,234	969
Annual recurrent personnel cost[3]	5,787	231
General Administration[4]	17,055	682
Subtotal	47,076	1,883
Broadcasting Cost	18,230	729
Total	65,306	2,612

1. *The number of new radio programmes produced in 1984 was 1,078 twenty-minute programmes or 359.3 programming hours.*
2. *Share of the capital cost of EBPC for radio production is one third of the total capital cost of EBPC.*
3. *The personnel costs of producing the radio programmes are collected from four radio production teams. For each programme the costs include the following items:*
   - *3.1 Payment for one educational technologist (฿ 100 or $ 4), one coordinator (฿ 100 or $ 4), one or two content specialists (฿ 75 or $ 3 per person), one or two actors (฿ 30 or $ 1.2 per person) and one announcer (฿ 75 or $ 3). The total payment for one programme should not exceed ฿ 400 or $ 16.*
   - *3.2 Transportation cost for non-STOU personnel (฿ 100 or $ 4 per person).*
   - *3.3 The opportunity costs of producing a radio programme estimated from the number of hours spent producing a radio programme multiplied by average hourly wage including fringe benefits which comprise 22.37 % of total salary.*
4. *The General Administration Cost is estimated to be 10 % of the total administration cost of the university. The administration cost includes the cost of running the Office of the Rector, which accounts for 14.75 % of the total recurrent cost. The General Administration Cost per Programme is ฿ 5,685 ($ 227.4) or ฿ 17,055 ($ 682) per programming hour.*

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* *PRD is responsible for 11 stations around the country. The central office in Bangkok coordinates and serves as a switch station. Radio programmes are transmitted to 11 stations from the agencies involved in REP.*

5. AVERAGE ANNUAL COST PER STUDENT-HOUR OF PROGRAMMING (TABLE 2)

The total cost per subject is the sum of the following costs: total costs of learner participation, broadcasting, general administration cost and programme production cost. Average annual cost per student, hour of programming is estimated from total cost per subject divided by learner-hour. This can be expressed by the following equation:

$$y = a + \frac{(b+c+d)}{x}$$

where y = listener-hour cost

a = opportunity cost of student listening to a one hour radio programme, i.e., 27.15 Baht or \$ 1.09 (see Note 2 of Table 2)

b = programme production cost per programming hour, i.e., 30,021 Baht or \$ 1,201 (Table 1)

c = general administration cost per programming hour, i.e., 17,055 Baht or \$ 682 (Table 1)

d = broadcasting cost per programming hour, i.e., 18,230 Baht or \$ 729 (Table 1)

x = number of listeners

Average annual cost per listener-hour =

$$\text{Baht } 27 + \frac{65,306}{x} \text{ or } \$\,1.09 + \frac{2,612}{x}$$

This equation explains how the total annual cost of production, general administration and broadcasting can vary with the number of listeners. The only variable cost is the opportunity foregone. With various hypothetical numbers of students, a series of per student-hour costs is generated (Table 3). It is obvious that when the number of listeners reaches 100,000, the fixed cost per student-hour drops to below 0.5 Baht per student. After that what is significant is the variable cost only (Graph 1). The economy of scale per student-hour is reached at approximately 100,000 listeners.

CONCLUSION

Three points emerged from this analysis of the costs of the radio programmes at STOU:

1. Fixed costs per programming hour at STOU are more expensive than at the in-school and the Radio Correspondence Project (RCP). Perhaps the facilities at STOU are expensive and the recording facilities are not as heavily used as those producing the in-school and the RCP.

2. It is worth emphasizing that it is urgent and impor-

Table 2: Estimated Annual Cost per Learner-Hour of Programming of STOU[1]

Subject	Enrollments (students)	Total Cost of Learner Participation[2] (฿)[5]	Total Cost of Broadcasting (฿)[5]	Total Cost[3] (฿)[5]	Average Annual Cost Per Student Hour of Programming[4] (฿/Learner-Hour)[5]
22252	10	1,539	139,824	408,284	7,200.8
22342	13	2,001	164,070	432,992	5,875.1
22251	19	2,925	133,626	403,472	3,745.2
10121	31,044	4,778,929	467,782	5,513,632	31.3
30201	20,383	3,137,769	206,546	3,611,236	31.2
10151	69,879	10,757,208	322,124	11,346,253	28.6

1. Table 2 illustrates only the three highest and the three lowest costs per student-hour of programming.

2. For each subject, it is assumed that STOU learners have to listen to seventeen twenty-minute radio programmes or 5.67 hours of radio programming. Cost of learner participation in this case is the opportunity cost of listening to the radio programmes which is estimated by multiplying enrollments in each subject with average hourly wage and number of programming hours per subject (5.67 hours). The hourly wage is the average salary (฿ 3,262 or \$ 130.5 per person per month) plus fringe benefits (22.37 % of salary) divided by 21 working days with 7 working hours per day, i.e., hourly wage = $\frac{฿\ 3262 \times 1.2237}{21 \times 7} = ฿\ 27.15$.

3. Total cost per subject is the sum of the following costs:

3.1 Total cost of learner participation which is ฿ 27.15 x enrollments ×5.67 programming hours = ฿ 153.94 x enrollments

3.2 Total Cost of Broadcasting which is ฿ 18,230 x broadcasting hours (Table 1)

3.3 General Administration Cost of ฿ 17,055 x 5.67 = ฿ 96,701.85 (Table 1)

3.4 Programme Production cost of ฿ 30,021 x 5.67 = ฿ 170,219.07 (Table 1)

4. Average Annual Cost Per-Student-Hour of Programming is estimated by dividing the total cost by the learner-hour (enrollments × programming hours).

5. U.S. \$ 1 = ฿ 25.

Table 3. Annual Cost per Listener-Hour of STOU Radio Programmes with Hypothetical Number of Listeners

No. of Listeners	Average Annual Cost/ Listener-Hour (฿)
50	1,333.1
100	680.1
200	353.5
500	157.6
1,000	92.3
5,000	40.1
10,000	33.5
20,000	30.3
50,000	28.3
100,000	27.6

1. It is assumed that the programme will be broadcast only once. The average annual cost per listener-hour can be estimated by the following formula:

$$Y = a + \frac{(b + c + d)}{x}$$

2. U.S. $ 1 = 25 Baht

tant to know more about the STOU audience. As stated in Louis Woo's report, it is necessary to know how many students are listening to each programme. How often do they listen? How do they respond to the radio programming? (Woo, p 25). We have few answers to these questions. As one extreme case, if only 10 students were to enrol and all 10 students were to listen to the radio programmes, would it be worth it to broadcast the programmes over the whole country at a cost of about 7,200 Baht per student-hour? Perhaps other alternatives to radio programming are needed if the number of students is too small, with the time saved being reallocated to larger target groups.

3. It is obvious that the economy of scale per student-hour is reached at approximately 100,000 listeners. However, to expand the radio programmes their impact should be considered rather than expanding to reduce student-hour cost.

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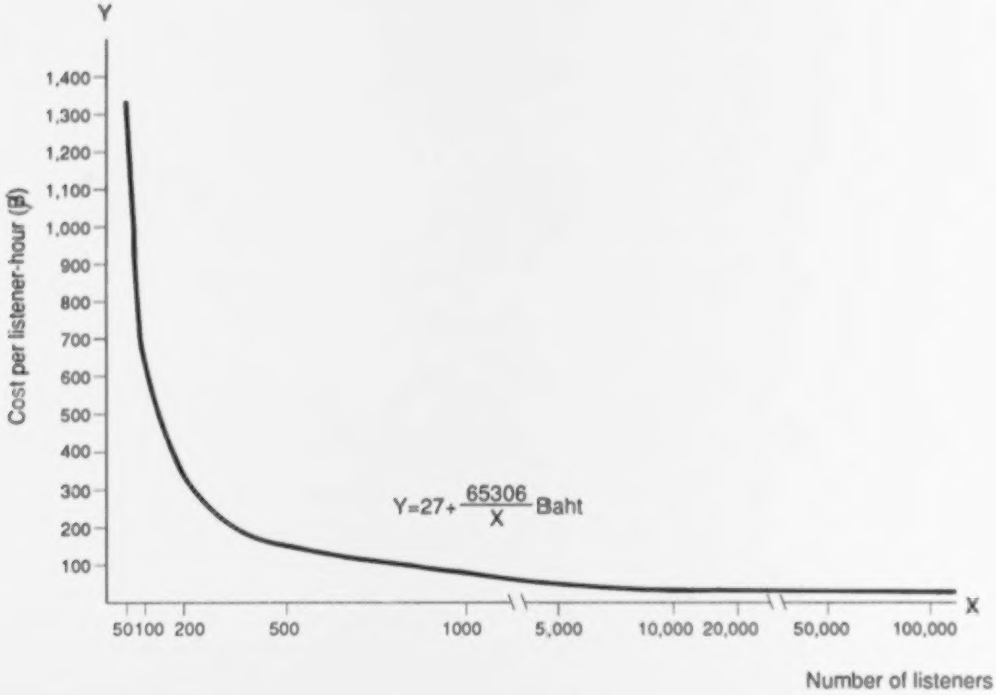

Graph 1: Average Annual Costs of STOU Radio Programmes per Listener-Hour.

Computer conferencing
A breakthrough in distance learning, or just another technological gadget?

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INTRODUCTION

NKI is one of the larger non-governmental educational institutions in Norway, offering distance learning programmes within the vocational/technological field. However, it has also developed other activities including: a decentralized four-year full-time college of engineering, the two first years of this programme being offered at 15 different sites in Norway, a two-year full-time programme in administrative computer science, and courses for the industry combining distance learning methods with on-job training. The fact that the "traditions" of the institution have come from distance learning, independent study and ideas of student autonomy and flexibility of organization, has resulted in full-time and combined studies based on similar thinking. Thus, computer conferencing has a number of possible applications for communication within the administrative, academic and teaching field of the organization. When starting the NKI computer conferencing project, EKKO ("electronic combined education", Paulsen, 1987), however, the main aim was to explore new communication solutions within the structure of distance learning.

DISTANCE LEARNING AND NEW MEDIA

A lot of optimism has been expressed about the possibilities of audio-visual and communication media for distance and adult learning. There is no doubt that media developments in many cases have increased the availability, quality and efficiency of learning. On the other hand it is often reported that the new media do not live up to expectations, and that cost-efficiency analyses often result in reducing the importance of expensive media use in the teaching/learning system (Bates, 1983; Holberg, 1985).

In our context we have followed the national and international experiences closely, as well as carrying out or taking part in some projects on audio-visual media, broadcasting and computer applications.

We have concluded that within the financial frames of student-paid courses in Norway and the learning objectives of the majority of courses, it has been a wise policy to concentrate on: pedagogical and technical development of the printed material for course presentation; developing student support and counselling services; group activities and local face-to-face teaching, and experimenting with cheaper media such as audio-cassettes and telephone. Nevertheless, we have for many years looked upon the developments within computer conferencing as a possible major breakthrough within distance education media developments. Whether this assumption is correct, remains to be seen. It has become clear that there is a number of practical and theoretical problems which need to be solved.

COMPUTER CONFERENCING

Computer conferencing systems are designed to facilitate interpersonal communication. A host-computer is used for storing, organizing and distributing written information. The users communicate through the host-computer via PCs, modems and telephone lines.

COMPUTER CONFERENCING IN DISTANCE EDUCATION

Hiltz (1986) seems to have laid much of the theoretical and practical foundations for the concept of "the virtual classroom", thus introducing computer conferencing as a means of establishing the communication structures normally taking place in the physical classroom. Others (e.g. McCreary and Van Duren, 1987) have pointed out educational functions of computer conferencing in general, while a number of writers also have discussed applications specifically within distance education (e.g. Harasim, 1987; Roberts, 1987). Of special interest in our context has been the work of Kaye (1987) on integrating computer conferencing in the large-scale distance learning system of the British Open University.

We agree with the position taken by a number of writers in the field, that the most exciting challenge in the long run will be to apply the new technology to create new and more effective learning situations, rather than replicate the traditional classroom or distance learning environment. On the other hand, to achieve this goal, one will have to learn how to use the medium in different kinds of existing learning environments, and to find better solutions to existing communication needs.

In the following we identify a number of areas in our distance learning system where computer conferencing can be applied.

DISTRIBUTION OF INFORMATION:

Distance teaching systems have a large need for increasing the efficiency in updating and distributing information to the students.

Examples: Information about courses, seminars, student associations, examinations and updating of learning material.

TWO-WAY COMMUNICATION BETWEEN TUTOR/COUNSELLOR/ ADMINISTRATION AND STUDENT:

In most distance teaching systems submission of assignments for correction and comments is an important element. It has been demonstrated that long turn-around times may have destructive effects on course completion (Rekkedal, 1983). It also takes a long time for students to get answers from their tutors when they really encounter problems in their studies. To some extent, the telephone has been applied as a means of communication. Electronic mail is independent of both time and space.

Examples: The student may ask questions at any time, without the time delay of mail services. In principle, draft solutions may be submitted and commented on, thus introducing a more flexible organization of tutoring and assessment. If desired, student answers may be made available to other students, before or after their submission of their work. Included in the system can also be on-line computer-scored tests, as a substitute for off-line testing which we have seen in some distance learning systems. On a higher level, the two-way communication may serve as guidance for individual student projects.

A SUBSTITUTE FOR FACE-TO-FACE TEACHING, INTRODUCTION OF GROUP DISCUSSIONS AND PROJECT WORK:

A number of distance learning systems include the possibility of face-to-face meetings with tutors and/ or fellow students. For many distance learners, the possibilities of taking part in such activities are very restricted. Some theorists have argued that direct teaching may have disruptive results on student autonomy and ability for self-study.

Examples: While face-to-face teaching in distance learning systems often seems to have developed into lecturing/presentation of subject matter, computer conferencing concerns information exchange and discussion. Discussions taking place in the classroom can develop into exciting experiences of group learning. The discussion is time- and space-independent: the medium seems to foster equality of status between students, and between students and tutor. Specifically designed group learning methods may be applied such as group submission of assignments, group learning and presentations, group seminars and project work.

THE PUBLIC TUTORIAL:

Student questions of a general academic or administrative nature may be accessible to all students, as a question from one student normally will be of relevance for others. Preproduced comments on general aspects of a course can now be distributed online, and the tutor is given an opportunity to expand on the preproduced learning material.

PEER COUNSELLING:

As peer counselling and information co-operation is a natural part of the on-campus activities of any teaching institution, the possibilities in computer conferencing are obvious. It has been demonstrated that computer conferencing in general may give peer help in solving problems — often from an "unknown friend". In large-scale systems, where hundreds of students are studying the same subject, peer help may be of particular importance.

FREE-FLOW DISCUSSION:

A number of educational conferencing systems have formally established informal meeting places for continuing discussion such as the "cafeteria", or "local pub". Through the computer informal discussions and student association activities may develop.

THE LIBRARY:

A collective database can be created within the conferencing system to facilitate the availability of relevant articles, short lectures, etc. to the distance learner.

THE NKI CONFERENCING PROJECT

The NKI development project within computer conferencing is planned to include six stages:

(1) introductory search in the field
(2) development of a computer conferencing system installed on our minicomputer, HP 3000
(3) pilot try-outs with on-campus students
(4) study tours to a number of institutions using computer-based conferencing systems
(5) pilot try-outs in distance learning
(6) introducing computer conferencing into the distance learning system on a larger scale.

During stage 1 it was decided that we would develop our own system, EKKO. The decision was based partly on the constraints set by the equipment we possessed and partly on the interest of developing inhouse expertise. Whether this was a sound decision remains to be seen; however, the important thing at that time was to get started.

Stage 2 was completed in 1986. EKKO now has about 500 users.

Stage 3 we delivered three courses called: "Introduction to computer conferencing", "Business data management" and "Data communication".

During stage 4 we visited a number of institutions in the USA and Canada. During this visit we became acquainted with different computer conferencing systems, such as EIES, Participate and CoSy. We learned that the perceptions of the different systems' applicability for learning and user-friendliness varied a lot among the people we met. We also learned about different uses of special relevance for our own situation. Some of these are described below.

Two of the universities we visited, The New York Institute of Technology (NYIT) and The New School for Social Research, had clearly adopted computer conferencing as a major element in their distance learning courses. One major difference between the applications was found. While the NYIT recruits students at all times, gives them the choice between computer conferencing and correspondence study and has developed preproduced learning material, the New School's courses have fixed starting dates, paced study schedules and no preproduced learning material. The result seemed to be that the first system retained the flexibility of distance education, but because of the low number of students at any time, student-to-student communication was nearly non-existent. What surprised us most was the fact that neither of the universities had much tradition or experience in distance teaching, but had been able to adopt computer conferencing with little hesitation when developing their distance teaching system. Both institutions reported some difficulties in preparing the academics for the new teaching method.

We visited also The New Jersey Institute of Technology and The University of Guelph. Both universities are specifically known for the development of their respective conferencing systems. We experienced how computer conferencing had been introduced to supplement or substitute on-campus teaching, and realized that computer conferencing in many respects may eliminate the difference between on-campus, off-campus and distance teaching. This perception was even more clear when discussing the experiences at The Ontario Institute of Studies in Education where Harasim (1987) has carried out some interesting pilot courses where specific computer conferencing facilities for group learning had been applied.

CONCLUSIONS

We see that we have a long way to go before we know how computer conferencing can be most efficiently applied in distance education. We note that a number of pilot experiments have been carried out. Some promising results are reported, but a number of technical, programme and pedagogical problems remain to be solved.

Our main aim in stage 5 will be to start with some relatively simple experiments to see how this technology can address some of the communication problems in distance learning with special attention to group building and group learning.

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Curriculum equity for isolated primary students

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During 1986–87 the Education Department of South Australia conducted a review of primary education. One of the most fundamental concerns of the investigation was the matter of equity, not only in terms of equitable delivery of resources but also in relation to the provision of a relevant curriculum and appropriate learning experiences for primary students whatever their social, cultural, economic or geographical circumstances. The review paid special attention to groups of children who might be faced with potential educational disadvantage. Among these were isolated children who, because of remoteness, illness or itineracy, are enrolled with either the S.A. Correspondence School or the School of the Air.

It is generally acknowledged that learning at a distance creates certain disadvantages for young learners. Despite the claim made by a few non-conformist parents that correspondence education allows the immediate family greater control over a child's learning programme, and is therefore preferable to regular schooling, most correspondence teachers would support the notion that interaction with other children and adults is a critical factor in a child's cognitive and social development. Schools have the capacity to provide a wider range of learning experiences and, because resources can be more easily shared, education tends to be more cost-effective and therefore more comprehensive than is feasible for most isolated learners.

Most families who enrol their primary-age children with a correspondence school have no option but to teach them at home guided by the lessons provided through the mail, as well as by telephone or radio, occasional visits from a teacher and regional gatherings of isolated families. These parents are conscious of the educational inequities which their lifestyle imposes on their children but they appreciate the unique closeness of the learning relationship which usually develops between them and their correspondence teachers. Most of them are keen to take advantage of the efforts made to compensate for their children's isolation from regular school services. Whereas in the past most isolated parents limited their expectations of the curriculum offered by the Correspondence School to the basics of literacy, numeracy and some factual knowledge of the world, a new generation of isolated parents expects a much wider curriculum which also focuses on the child's physical, social and creative development and reflects more modern methodology. They are now more concerned that, unless their sons and daughters have had learning experiences similar to those which are being provided for children in schools, their children will be more than just socially disadvantaged if they follow the common path for most children from remote areas and leave home to attend school for their secondary education.

This concern has been expressed by some correspondence teachers for many years. Indeed the most frequently expressed criticisms of distance education from the wider teaching fraternity have been directed at its narrow, traditional curriculum offering and its slowness to respond to curriculum change. There are a number of reasons for the apparent lack of ability of correspondence schools to keep pace with curriculum changes in the wider education system but, while these need to be understood, it is no longer valid to maintain the status quo because of the perceived obstacles to change.

One of the most commonly quoted justifications for avoiding the development of new approaches to teaching isolated children has been that their parents either do not want or will not cope with change. Some parents who take on the commitment to supervise their children's correspondence lessons tend to view learning only in terms of their recollection of their own schooling and some vigorously resist new styles of teaching but, as outlined above, these parents are diminishing in number. Their views are not invalid and should be sensitively challenged but they cannot be allowed to dictate curriculum policy for the whole school community. The Correspondence School has, I believe, a responsibility to attempt to accommodate their concerns and encourage a more positive and accepting attitude to new developments in education.

Another reason given for avoiding change is the concern felt by many experienced correspondence teachers that some of the new approaches in teaching some subjects are not appropriate within the context of distance education. They will justify this belief with statements about the mothers being alienated by the new programmes, about the methodology being inappropriate for distance education or too difficult for untrained home supervisors to implement or that some school subjects are irrelevant for isolated children. Some will quote instances of curriculum changes in the past which were mismanaged. This has certainly occurred but does not necessarily justify a retreat to out-dated methods and curriculum content.

The most valid reason for slowness to develop new courses is that the task is more complex and costly than educationalists working outside distance education can accept. Current philosophies in teaching reading, spelling, creative writing, social science, mathematics, and other subjects present enormous challenges to distance educators involved in attempting to translate these curriculum models into a format which will function effectively under the constraints which distance imposes on the learning situation. Correspondence course writers and designers faced with this task inevitably encounter the dilemma of whether or not to compromise the requirements of the Education Department's curriculum guidelines to match their perception of the home supervisor's or student's capacity to implement some learning activities or whether or not they should deny isolated students the right to learning experiences provided in other schools merely because the task is fraught with difficulties.

The distance educator in this situation is very vulnerable. To comply religiously with curriculum guidelines designed for classroom teaching risks placing unreasonable pressures on some home supervisors but to ignore these policy documents invites the condemnation of colleagues in other schools when correspondence materials are published and distributed far and wide. Too often distance education programmes are judged by others only by their appearance and content without any perception of the communication process which begins to operate when they are put into practice.

However, the designer of this material senses the need to protect his or her professional integrity as well as to provide adequately for the educational needs of isolated students. Some writers, in their attempt to produce completely "fail-safe" courses, compound their own personal dilemma and frustrate the need to provide isolated students with relevant programmes on schedule by taking too much care.

I believe, however, that it is possible to provide a more equitable curriculum opportunity for isolated primary students and deal successfully with some of the inherent difficulties. Frequently, I believe, teachers are threatened by curriculum innovation merely because it is unfamiliar. Overcoming ignorance about proposals for change involves the provision of opportunities to observe change in action. Visits to schools where new programmes are working successfully is a most important step in attempting to reverse resistance to change. Other steps include professional development activities such as guest speakers who can heighten anticipation of the benefits children will gain from a fresh outlook in reading or spelling, for instance; discussions with classroom practitioners and with distance education colleagues about the potential benefits and costs of curriculum change; and special training for staff members selected to design and implement a new learning programme.

Ideally, a teacher with recent classroom experience should be a member of any course writing team for I believe that it is important for correspondence programmes to reflect as closely as possible current classroom practice. All correspondence teachers need to be familiar with sound classroom methodology even though much of their interaction with their students is more individualised and is dependent on different techniques of communication. Course developers, in particular, must find ways to recreate classroom-type learning experiences for an isolated child with limited personal and physical resources. If an enquiry method of learning demands that children research, investigate, discuss and hypothesize a particular topic, these activities must be outlined in such a way that both the student and the home supervisor are motivated, instructed and resourced to approach the lesson with confidence.

The traditional correspondence approach would have provided the child with information to be learnt, questions to be answered, pages to be posted and, after the correspondence teacher had marked the work, corrections to be returned. Some parents are more comfortable with this style of teaching and have very deep concerns about "new-fangled" methods which they believe to be frivolous and superficial because there is greater emphasis on enjoyment and individual response and because the learning outcomes are less prescriptive. Because distance educators of young children are so dependent on home supervisors for the success of their courses, such attitudes can not be ignored. When we alienate these parents, we undermine the partnership which must exist between them and the children's correspondence teachers.

Therefore a strategy for implementing innovation, which not only notifies and informs isolated parents of proposed curriculum changes but also consults then and directly involves some parents in the process, can ease these concerns and, possibly, produce a more appropriate course for their children. Teachers are often reluctant to work closely with parents at this level because, I suspect, they see this as a threat to their professional status or because they fear that constant consultation may complicate the process of change. I believe that this kind of consultation must be accommodated if we are going to avoid loss of credibility. In South Australia the indications are that parent representation in this kind of planning will be a requirement rather than an option for schools. More importantly, however, it creates a forum for the concerns of parents to be identified and considered and for an appropriate inservice programme for supervisors to be planned.

One of the responsibilities which course writers have assumed has been the task of motivating interest in the learning programme. Great effort and expense have been expended on producing printed materials which aim to capture the child's attention and maintain an enthusiastic response through the inclusion of appealing illustrations and well-designed and colourful pages in the printed materials. These factors are not insignificant and, for most students, have achieved the aim of inviting keen involvement. However, I have begun to question the relative cost-effectiveness and time taken to produce these courses. By what measure do we evaluate the effectiveness of a correspondence programme? If it is on appearance and design alone, the expense and time spent on some courses can be justified. If, as I believe, the quality of interaction and involvement which springs from the pages or tapes which a student follows is a more important factor, there are potential advantages in making our courses more flexible and more student-centred.

At present we are revising our primary programme in English, now known as Language Arts, in line with current classroom practice. This places a much greater focus on students choosing their own reading, spelling and writing topics and responding to their teachers in individual, rather than prescribed, ways. There have been considered compromises made in translating this model of learning to a correspondence format and there are still many instances of direct instruction but there is a much greater built-in emphasis on dialogue between teacher and student rather than on standardised responses.

It would be remiss of me to suggest that isolated children have not benefitted from old courses and traditionally designed materials. Correspondence teachers have for many years used such lessons imaginatively and have demonstrated in very lively ways that distance education is a process rather than a package.

But built-in flexibility which not only enables students to respond in different ways but also allows for modifications to be made to the course as easily and quickly as possible will, I feel, create a more appropriate and equitable learning framework for primary distance education in the years ahead. It will make it possible to respond to curriculum change and amend inappropriate lessons much more quickly.

Technology is aiding this process and making it possible for changes in print to be implemented with relative ease but there is also a danger of materials becoming too impersonal. We are discovering that there are important learning and motivational benefits if the correspondence teacher's personal hand-written or spoken input is evident to the young student when he or she receives each pack of lessons. It is too early to make sweeping comparative statements but present indications are leading me to believe that some students may be more highly motivated to respond to printed materials which has been originally hand-written and contains amateurish illustrations rather than to some of our most expertly designed and expensively produced courses. This issue is the subject of quite vigorous debate among our staff and valid arguments for both models of course-writing and production can be put forward.

Primary distance education in South Australia is at a critical stage. Pressures from some isolated parents and from the Education Department dictate that traditional styles of teaching remote children must be reviewed. In its aim to redress some of the inequities of distance education, the South Australian Correspondence School is committed to using its resources to expanding its curriculum offering and finding ways of communicating concepts with which many home supervisors may be unfamiliar as it updates its existing programmes. If these goals can be achieved, those isolated children who already have the benefit of a supportive, personal relationship with their home supervisors and correspondence teachers will be potentially more advantaged educationally than their peers who attend school each day. However, it will continue to be necessary for correspondence schools to provide opportunities for social interaction and school experience to remove the last traces of inequity for isolated primary students.

Prior learning assessment at Athabasca University
A progress report

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Many educators, together with developmental and personality theorists (Levinson, 1978; Loevinger, 1978; Perry, 1968), suggest that when providing learning opportunities we consider the whole student by recognizing prior learning, life situations (Crary, 1982) and developmental patterns (Weathersby, 1981).

Universities already respond to students who have prior learning. For example, if a student has taken a course in introductory counselling from a university, then that student may apply to have such credit transferred to a psychology programme at another university. However, what happens in the case of a student who, as a pastor, acquired the same information and skills less formally through a combination of on-the-job experience, private study and attendance at numerous counselling workshops? Individual faculty members sometimes make allowances for this kind of learning by waiving requirements or adapting individual reading courses; but not always. What can the university do to recognize explicitly this type of experiential learning in ways that maintain the integrity and credibility of the institution?

Experiential learning is defined by Kolb (1984) as "...the process whereby knowledge is created through the transformation of experience" (p. 38). More colloquially, experiential learning has come to refer to the knowledge and skills which have been acquired outside of formal educational settings. Such learning may have been attained through the workplace, volunteer work, travel, seminars, books, hobbies, etc. The history, development and rationale of experiential learning has been described elsewhere (Chickering, 1981; Keeton, 1977; Kolb, 1984; Torbert, 1972).

One of the practical applications of experiential learning theory is the assessment of prior learning. Prior learning assessment is an educational evaluation tool. It is a set of strategies in use at a number of colleges and universities, mainly in the U.S., which determines whether the skill, knowledge, attitudes and values which a person has acquired informally are worth academic credit. Where credit is given, it is given for the learning which the person has achieved, not the amount of experience they may have accumulated. Some of the strategies used in prior learning assessment include challenge exams (also referred to as credit-by-examination), license or certification accreditation, programmes which accredit corporate training and portfolio assessment (Simosko, 1985).

Adult students bring to the learning situation a general background of personal experience and prior learning which is usually of a greater breadth and depth than that of the 18- to 24-year-old student group. For a review of some of the specific characteristics of adults as they relate to distance education, see Hough (1984). Distance-education institutions of higher learning are usually responsive to the needs of their adult students. Modifications to entrance requirements and to requirements of time and residence are all examples of this responsiveness. The use of prior learning assessment is one more strategy for extending this responsiveness to adult students. This paper will relate the development of Athabasca University's (AU) interest in prior learning assessment and will outline the progress we have made thus far in piloting the Experimental Project for the Assessment of Prior Learning (EPAPL), using the portfolio development method of prior learning assessment.

LOCAL BACKGROUND

In Canada, there are very few examples of institution-wide projects in prior learning assessment in post-secondary institutions, particularly at the university level. At the college level, the most notable development has been a province-wide series of projects in Quebec within the Collèges d'Enseignement General et Professionel (Isabelle, 1987).

AU was an interested observer of experiential learning in the mid-seventies. At that time, the most visible development in this area of higher education

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was taking place in the U.S. with the Cooperative Assessment of Experiential Learning Project (CAEL). This project was a joint venture of the Educational Testing Service and a small number of American colleges and universities. AU sent individuals to CAEL conferences (the name was changed in 1977 to the Council for the Assessment of Experiential Learning) and generally tried to keep abreast of developments.

In the late 1970s, interest in experiential learning seemed to wane at AU due, mainly, to a preoccupation with course production. Then in 1982–83 the psychology professors began to experiment with the concept of competency-based education within the psychology curriculum. Competency-based education is another dimension of experiential learning and, indeed, in many institutions is the curricular basis for making judgements about the crediting of prior learning.

There were other signs that AU was ready to look again at experiential learning: In early 1985, a small research project was funded to investigate the life structure, including prior learning, of both active students and those who had left AU. A university-wide policy for the establishment of challenge exams was introduced and later passed in 1986–87 and, at the same time, approval was granted for the EPAPL under a special fund for innovation.

PORTFOLIO DEVELOPMENT

There are two key terms which should be defined when discussing portfolio development: "portfolio" and "university-level learning". A portfolio, as used here, refers to a set of documents which describe and attest to what a student has learned. The portfolio describes what the student knows in relation to the learning required in a specific AU course. In addition, the portfolio describes where and how the student's learning was acquired. It is through the assessment of the portfolio that a student may be awarded course credit for prior learning. The learning we are talking about must be at the university level. University-level means competence commensurate with that which is expected of a student who passes the university course for which credit is being sought.

It is learning and not necessarily experience that counts. For instance, a student who has worked with his or her child over ten years to overcome the child's learning disabilities may gain credit for what he or she has learned about the assessment and remediation of these disabilities and about child development — not for having lived ten years with a disabled child.

In EPAPL, we followed a pattern for portfolio development that consisted of four sections:

(1) personal and educational goals,
(2) chronological record,
(3) competency request and
(4) documentation.

Each section is a major component of the portfolio. The student is expected to do the writing with help from a faculty advisor who has had training in prior learning assessment.

The first section, personal and educational goals, is the student's statement of these goals and how and why he or she hopes to achieve them. The second section, the chronological record, is a year-by-year presentation of the student's acquisition of knowledge, skills and experiences which relate to the course or courses that are under consideration for credit. The third section is the competency request, which directly relates the student's prior learning to the specific learning outcomes of the course or courses for which credit is being sought. Finally, the documentation is the evidence that the student provides to verify what he or she is claiming to know. This may consist of certificates, promotion evaluations, reports, samples of products or a list of people who can be contacted to verify parts of the portfolio.

PROCEDURES AND PROGRESS

Interested staff members at AU attended a three-day workshop with a trainer in prior learning assessment from CAEL's central office. We then adapted procedures in portfolio assessment to our own context.

We are field-testing the portfolio development process of prior learning assessment within the mainstream of the regular operations. Offering a service while at the same time trying to establish it is too often the bane of educational development. We needed to keep the service large enough to test out the problems, but not so large as to overwhelm our small resources. We offered the service to students who had already registered in either of two courses, one in Psychology and one in Anthropology. The courses were chosen because they had a past record of attracting the kind of student who might already be familiar with large parts of the content.

One of the curricular requirements for prior learning assessment has been the production of a course description that succinctly communicates what a student is expected to know or know how to do by the end of the course. This description could not be so general as to be vague, but neither could it be so specific as to be dependent on one specific textbook. Furthermore, it could not be overwhelming in length. What we needed was a generic set of course objectives that would enable prospective students to judge the adequacy of their prior learning in relation to the particular course under consideration. A number of CAEL members have termed this comprehensive set of objectives the "learning outcomes" for the course.

Most of our courses were not designed with learning outcomes as an explicit feature. Calendar descriptions were too vague and unit objectives or study questions were too specific and too numerous. Writing this list of learning outcomes was a difficult exercise for some faculty since the list needed to account for the range of knowledge that might be acceptable and equivalent to the particular course being offered in the calendar. The ease of such an exercise would undoubtedly differ between disciplines.

In addition to the learning outcomes for the selected courses, a student guide for portfolio development was produced. This guide introduced students to the concepts of prior learning assessment and helped them through the process. A telephone advisor was assigned to the students and a collection of forms was produced to facilitate the documentation process.

Finally, subject-matter experts who were willing to evaluate the portfolios had to be found. Their job was to decide whether or not credit should be awarded for a particular course on the basis of a student's portfolio. These experts had to be impartial as much of the credibility of the whole project was vested in them. A handbook was developed for these evaluators to give them an idea of what the students had done, what verifications were possible and how to prepare their evaluation report. At this point of writing, we have not had any students who have completed the whole process.

CONCLUSION

Institutions of distance education usually facilitate learning for adults by opening traditionally restrictive entrance requirements and by minimizing conventional requirements of time and residence. Prior learning assessment involves none of these mechanisms directly. Rather, it modifies the accreditation process by increasing the range of its response. Prior learning assessment tests the assumption that all university-level learning must be done at the university.

The success of prior learning assessment will be judged in the light of many factors. Cost is a critical factor which has not been highlighted here because we have not completed the project. See Knapp's (1981) analysis on costing for more details from an American perspective. The credibility of the process used will also be an important factor. Ultimately, the real test of success will be the relative success of students who graduate with credit from prior learning assessment.

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Gender in distance education: women and men studying at the West German FernUniversität

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1. RESEARCH ISSUE

The West German FernUniversität (Distance University) was founded in the mid-seventies and admitted its first students in 1975/76. Today over 35,000 students are registered, more than half of them in a degree program. From the beginning, women have been extremely under-represented among the FernUniversität's student population, both absolutely — less than 25% of the students are women — and compared to traditional West German universities where the proportion of women has reached 40% (cf. Peters 1976, Arbeitskreis Wissenschaftlerinnen in NRW 1984; BMBW 1985; von Prümmer 1985).

The reason for this low percentage of women students is usually assumed to be the limited range of subjects available at the FernUniversität and the fact that these subjects are considered more attractive for men than for women (Peters 1976 and 1981). This, however, is not a sufficient explanation since — compared to conventional universities — women are under-represented within each of the degree programs (BMBW 1984 and 1985; von Prümmer 1985).

Another attempt to explain the under-representation of women is that distance education puts more pressure on women since they have to take care of their families in addition to studying and possibly holding down a job (Heinze 1980). This is contradicted by the postulate that distance education is especially suited for women since it does not require extended absence from home or a fixed schedule.

These contradictory assumptions show that there is insufficient information about the situation of women at the FernUniversität. Students themselves feel a need for research on "the conflicts arising from the multiple demands of studying/employment/family" and hope detailed results will help them to cope better (Harbecke 1982, p. 17; cf. also Schneidereit 1980).

The present project therefore focusses on the conditions under which women and men study at this institution and how they manage to fit their distance studies in with their other commitments. The results will provide insights into aspects of the FernUniversität's study system that make studying more difficult than necessary and will suggest ways in which the institution could attempt to accommodate better the needs of its students.

A parallel study will be carried out at the British Open University in 1987/88, and we hope that a cross-cultural comparison will provide further insights into factors which help or hinder women in our respective study systems.

2. SAMPLE

Since this is the first research project concerned with these issues, a large-scale quantitative survey was planned to provide some basic information. A cohort of female students and a corresponding sample of male students was chosen to furnish data on the under-representation of women at the FernUniversität. The basic parameters for both groups were:

- degree students (full-time and part-time students plus students registered at other universities but taking part of their degree courses at the FernUniversität)
- first registered at the FernUniversität for the academic year 1985/86
- re-registered for the summer semester 1986

These basic parameters were chosen because the study is also concerned with the reasons why students register for a given subject area or degree course and only degree students can reasonably be expected to answer these questions. First-year students were selected because they are still relatively new to the FernUniversität yet by the time they got the questionnaire already had some experience with distance education. One reason for including only new students was that we are hoping to do a follow-up study at a time when these students are halfway through their degree courses; i.e. have either taken their preliminary exams, or have discontinued their studies at the FernUniversität.

Because of the comparatively low number of women students we included all women who fit the basic sample parameters, but the men were selected as a stratified random sample which aimed to mirror the group of female students in the main characteristics of matriculation status and subject area/degree course. Since the number of women exceeded that of men in education, the sample was made up with men enrolled in subjects with low numbers of women students, mainly electrical engineering. The number of men and women is thus equal, totalling 2,430 students.

3. DATA COLLECTION

The main study was conducted as a postal survey for two reasons: First, the sample was too large to make other forms of data collection feasible. Second, distance students are used to communicating with their university in writing. The detailed and lengthy questionnaire covered students' educational and employment background, their study motivation, the decision to enrol at the FernUniversität, and the choice of subject. Questions about students' family situation and private life, especially problems they may face in trying to combine their studies with their family life and/or paid work, predominated.

4. STUDENT RESPONSE

The response far exceeded our expectations, not only because of the high response rate — almost half the questionnaires were filled in and returned to us — but also because of the time and effort students put into their open-ended answers and comments.

A total of 859 questionnaires were sent back to the FernUniversität spontaneously. After two reminders the number increased to 1,193 which is a return rate of 49.1%. In addition, we received 266 postcards giving reasons why students were prevented from filling in the questionnaire or why they refused to participate in the survey. Compared to other research done at the FernUniversität and given the length of the questionnaire, we feel that this high response rate indicates a widespread acceptance of our project. Almost all participants asked to be informed about results, and upon receiving our initial report (von Prümmer & Rossié 1987), a number of them have asked for additional information.

5. DATA ANALYSIS

We have coded the closed questions in preparation for electronic data analysis using the SAS (Statistical Analysis System) package available at the FernUniversität computing center. Comparisons with the university's student data banks are only possible on a generalized level since we guaranteed total anonymity, and therefore cannot match individual data to information contained in the student files.

As far as the analysis of the open-ended questions and comments is concerned, we are confronted with a somewhat unexpected wealth of information. Some of the questions are easy to code process, but mostly we have to deal with this as qualitative rather than quantitative data, in spite of the large number of respondents involved. This means that we are not only trying to develop code plans for systematic, possibly electronic data analysis but that we also use content analysis and other qualitative methods.

We decided to approach the data in stages. This means that we look at selected sets of questions on different themes and will present the findings sequentially over the next few years. This consecutive approach precludes our pursuing immediately all the apparent or inherent relations between different aspects of the data. Within the framework of the data itself, we will progressively tie together and cross-reference the findings on individual aspects and test ideas developed from selected sets of information against other variables.

6. DISCUSSION

Our study is not just another piece of quantitative research done on a large scale by postal survey. We tried to introduce some elements of "interaction" and "rapport" with the recipients of our questionnaires. We were very open about the goals of our research, both in the covering letter and in the questionnaire itself. Not only did we set out the aims of the survey as a whole and of individual questions; we also made clear that we were motivated by a decidedly partisan approach with regard to improving the under-representation of women at the FernUniversität. In fact, before we sent out the questionnaire it was suggested that men might hesitate to fill in the questionnaire because of this obvious "bias".

As it turned out, this did not happen, and the relation between women and men among the respondents is about fifty-fifty. Together with the high rate of participation and the readiness of respondents to write in answers and comments plus suggestions for further research or for action, we take this as a confirmation of our approach. We are hoping that the progressive data analysis, which allows students to comment on how we deal with the information they furnished in the questionnaire, will be a means to continue the "dialogue" which will enrich our understanding of the conditions under which students live, work and study.

We have found this undertaking challenging and productive even though we have only just begun to work with and interpret the data. So far we have produced only the first of what we hope will be a number of reports. We are currently analyzing a set of questions dealing with student support services and the use of study centers (von Prümmer 1987). This theme will also be the first one to be subjected to a comparative analysis with the data collected at the British Open University.

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Joint research in distance education at ECNU

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BACKGROUND

The East China Normal University is located in Shanghai, responsible primarily for the training of teachers at the secondary level. Being a key university, ECNU serves a city and five provinces in the eastern part of China, with a total population of 300 million. This is done through collaboration between the University and Boards of Education and local institutions in provinces up to 1500 kms away from the main campus at Shanghai. Under this collaborative model, the local Board of Education is responsible for the recruitment of students and for arranging, with local institutions and teaching centres, for students to be accommodated for the face-to-face study sessions and to receive other forms of support.

ECNU offers an off-campus program to the Bachelor's degree level in eight academic areas. The students are admitted into the program through an examination process. The students themselves are typically secondary school teachers who are teaching the speciality in which they enroll to study through ECNU.

China is faced with the urgent need to push forward its 9-year compulsory education program. One of the major problems is a shortage of teachers. On the one hand there is a need for a large number of new teachers; on the other hand there are currently more than 8 million elementary and secondary school teachers, who do not have the background preparation which should normally be a prerequisite to employment.

To tackle the problem, the State Education Commission has adopted a support policy to promote the development of distance education and requires each institution regard distance education as one of its basic responsibilities which must be incorporated into the institution's future plans. In 1986, there were 360,000 off-campus students enrolled in 311 colleges and universities. ECNU currently enrolls approximately 3,000 students in the off-campus program and has been playing a major role in development of distance education in China.

RESEARCH PROBLEMS

Though distance education in China is stimulated by policy support from the Government and has been identified as a key strategy in the development of adult education at the post-secondary level, its delivery system stands in urgent need of modifying and improving. Take ECNU as a example: when the students are enrolled in the program, they are provided with learning materials and are expected to do a great deal of independent study in preparation for two face-to-face teaching sessions during the course — each of two weeks duration. During these face-to-face sessions instructors go to local centres from ECNU to provide intensive instruction — typically seven hours a day — for each of the two-week periods.

Such kind of practice has resulted in many problems. One of the major problems experienced by students has to do with the fact the print materials are seldom specially prepared for student learning in an independent study mode. The University also finds it difficult to arrange for instructors to travel out for the intensive face-to-face teaching twice a year. Moreover, the off-campus students are hard-pressed to find the time for such intensive training. These contraints resulting from the design of the program make expansion of the distance education difficult.

However, some years ago, ECNU began to direct more attention to the design of educational materials to specifically accommodate the off-campus learners and wanted to expand the distance education program with modern technologies and provide a new learning environment for off-campus students. These efforts were greatly inspired by the joint research with UVic. As part of the project, four distance educational personnel from ECNU went to

Canada to examine administrative and delivery strategies at UVic and other institutions. UVic arranged a training session for the group and prepared two prototype distance education courses together for use at ECNU.

Through the training session and research collaboration, the distance education personnel in ECNU have increased skill level in specific aspects of current distance education development and delivery and become more confident in the use of new technologies to expand distance education programs.

RESEARCH OBJECTIVES

As mentioned previously, ECNU operates large and growing, off-campus programs. And one of the major concerns is about the academic development and further expansion of the program. Moreover, there is an acute wish to ensure that off-campus instruction is done at a level consistent with intramural teaching. The general objectives of the research project, therefore, are identified as follows:

1. To determine if the amount of face-to-face instruction, currently used in the ECNU correspondence mode, can be reduced through the use of specially prepared audio and video material without a negative impact on the current high levels of student academic performance and course completion rate.
2. To use a variety of educational media to deliver course content in more appropriate and instructionally effective combination of formats.
3. To deliver many more courses at a distance, thus upgrading at a quicker rate and more cost effectively, a much larger number of secondary school teachers who are badly needed.

And these three broad objectives are pursued through the following questions:

1. How can existing delivery strategies which rely on print materials and face-to-face instruction be reconceptualized and re-combined with various formats?
2. Can the team approach to distance education course development be an acceptable alternative in adult higher education?
3. How can modern technologies be utilized effectively for the off-campus students and motivate students to learn and complete their studies?
4. What is the relationship between the use of different media formats and measureable student achievement?
5. How can adult learning theory be integrated with current approaches to curriculum development in adult higher education?
6. What is a cost-effective model to guide the administration of a large off-campus program of distance education?

METHODOLOGY

The research project is conducted in a naturalistic field setting in Wei Fang, Shandong Province and the basic strategy is guided by a "Pre-test, Post-test, Control Group" design:

1. Subjects are secondary teachers enrolled in ECNU credit courses at Wei Fang, Shandong Province.
2. Students are randomly assigned to the two groups.
3. A course on "Asian and African Literature" is chosen for the experiment.
4. The Control group is taught by existing distance education methods which use print, face-to-face instruction and tutors.
5. The Experimental group is taught by new, electronic, distance education methods specially developed at ECNU for the subject area.
6. Results of different strategies will be compared on a wide range of academic variables; academic achievement; affective (attitudinal); administrative cost-benefits; instructor (faculty) reaction; student acceptance; transfer (diffusion) into work setting; student motivation and retention, etc.

FINDINGS TO DATE

The joint research project is still underway and it is difficult to say exactly to what extent changes have occurred, because of the research project. However, the following preliminary indicators of results have been noted, and these have at least been partly stimulated by the joint research efforts.

The most dramatic results seem to be in redesign of the educational materials for distance education courses. Curriculum development at ECNU has introduced the team model of course development into its off-campus programming and placed more emphasis on the design of linear and sequential programs rather than ad hoc.

A second broad outcome is that research capacity has been enhanced at both the individual and institutional level. As it has been noted, the research paradigm in China exhibits some marked differences with Canadian approaches as well as those of many other countries, which stress testing of hypothesized relationships. However, in China more emphasis is put on empirical findings and "raise the practical experience to the level of theory". But now there is a stronger institutional interest in using educational theory to improve practice by careful experiment and measurement of results.

Thirdly, the joint research project is helpful in illustrating the importance of current theory regarding teaching and learning. It is a common practice in China that off-campus study focuses on the authority of the teacher rather than student needs. Now there is an intense interest in adult development and learning principles. It is believed that distance education makes greater demands on students as independent learners. ECNU has been making great efforts to move away from its high dependency on the teacher as the sole source of authority.

Fourthly, exposure to a variety of institutional approaches, as well as specific techniques and ideas for distance education administration has provided the distance education personnel at ECNU with an opportunity to study and compare different strategies and to integrate the components that will work in Chinese setting.

Finally, there is a growing interest in assessing and evaluating off-campus courses at a distance. With vast numbers of potential students, economics of scale are very attractive in China since course development costs can be spread over repeated usage with large numbers of students.

Evaluation and implementation findings of Minnesota's distance learning demonstration sites

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BACKGROUND

Four years of hard work, over ten million dollars in expenditures at the "Minnesota Technology Demonstration Sites" and three years of evaluation have provided information about appropriate uses of educational technology. This paper will review the very positive evaluation of distance learning through interactive television in Minnesota schools and the major factors behind those high evaluations.

This paper is based upon: 1) evaluation findings reported by the independent evaluation company "Quality Evaluation and Development (QED)"; 2) Extensive interviews with participants at all levels; 3) Information developed by Joan Wallin, Gilbert Valdez and Ruth Randall, the administrators responsible for the Model Technology Sites. Sixty-eight school districts in Minnesota were involved.

TECHNOLOGY

Interactive television can use a variety of technologies. Most systems employ copper cable, microwave, broadcast or fiber optic. Each system allows teachers in one location to teach students in several remote locations, allowing students and teachers to see and talk to each other in color and full motion throughout all the locations. The classroom where the teacher is located is called the host site. In Minnesota, the systems are designed so that any location can serve as the host site and different topics originate in each district. There are usually no adults present in the remote classrooms although many of them are located near administrative offices where on-site support is available.

The various systems have advantages and disadvantages. Though most expensive, fiber optics systems are less subject to interference than the rest of the systems. Properly adjusted, they provide superior picture and sound. Second in quality and cost is copper cable. Like fiber optic, it has the disadvantage that right of way considerations require negotiations or partnerships with commercial organizations.

Broadcast has the advantage that it can provide service to all schools within a service area in areas where cable does not exist. The major disadvantages are that it is FCC regulated and licensed and requires very expensive towers and transmitters that will provide direct line-of-site broadcasts.

EVALUATION FINDINGS

The following are some of the more significant evaluation findings.

1 Two-way full motion interactive television increased access to educational opportunities otherwise unavailable in small school districts and provided specialized low-incidence courses to larger schools. Small school districts that previously had been unable to offer even one foreign language or advanced mathematics class now routinely provide students with several choices. In larger districts, classes in Russian, Japanese and a variety of honor classes are being offered. At last count, 54 different courses were available in the ninety-seven school districts in Minnesota using two-way interactive television for educational purposes.[1] Community and higher education institutions also use the interactive system after regular school hours to provide learning opportunities for adults. Some of the interactive television systems operate as much as seventeen hours a day and thus make life-long learning a reality for community members.

2 Students can learn well over ITV systems. There were no significant differences in final grades or student achievement as measured by either criterion or norm-referenced tests between the 564 students selected for study in the ITV and traditional class comparisions.[2] Student grades received in interactive classes were very similar to the grades they received in their other classes. Class grades and unit test comparisons showed a

difference of 2.99 for ITV classes versus 3.00 in traditional classes on a 4.0 scale. Unit tests revealed a 2.73 in ITV classes and 2.74 in traditional classes.[3]

3 Teachers attitudes to the two-way television were quite positive. Seventy-five percent of the 25 teachers using it wanted to continue teaching on the system. None of the teachers said they would not teach on the system, although twenty-five percent were uncertain. Seventy-one percent did indicate that ITV teaching did require a changed style and method of teaching.[4] The most commonly noted problems were the need to do more planning and to have more student interaction to ensure feedback. Interestingly enough, the evaluators' studies revealed that teachers' styles were more modifications of present styles than dramatic changes.

4 Evaluations of 36 interactive classes and 36 traditional classes revealed that an average of 261 interactions took place in ITV classes and 270 in traditional classes. There was great variation among teachers regardless of the medium of delivery. Some teachers had as few as 79 interactions take place in their classes, some as many as 655. Less than one percent of the interactions were discipline related in either kind of class.[5] Classroom interaction and climate were more a reflection of the teacher's teaching style than of the delivery system. Teachers who were interactive in regular classes were more interactive on ITV and teachers who were lecturers tended to continue their dependence on lecturing irrespective of the technology.

5 Teachers believed advantages of the system include: "enlarging programs and course options for students, providing challenge and growth opportunities to build self-discipline among students, and the smaller class size which seems typical (usually 18 students or fewer). Participating students like their televised classes, learn about as much as in traditional classes, spend about as much time on tasks as in traditional classes, and were frequently more motivated and responsible in interactive situations."[6]

6 Evaluation findings showed that adoption of technology was most clearly linked to "the quality of the inservice... specifically designed to meet teacher's needs." Positive changes in educators' abilities and willingness to use technology often can be traced to demonstrations by their colleagues.[7]

7 The most difficult problems were adapting teaching and instructional design to incorporate the strengths of technology and reduce its limitations. Teacher knowledge about hardware and software were less serious problems if an expert was available to assist when there was equipment failure.

8 The major teaching disadvantages noted by teachers were: lack of personal contact with students leading to absence of control, movement and space restrictions, technical problems, delays in material transfer, problems with logistics of make-up work and conflicting school schedules.

CRITICAL FACTORS

Participants at the most successful interactive television sites agreed that attention must be given to three areas: 1) established policies and procedures, 2) inservice and instruction, and 3) classroom equipment and design.[8]

POLICIES AND PROCEDURES

Everyone agreed that extensive teacher involvement in the planning and implementation of the system was necessary. Teachers should have a choice whether to teach on the system and only those teachers who are highly interactive and personalize learning should be considered. There was general consensus that the number of students in host and remote sites needed to be monitored closely. Students' preparation, need for privacy and self-discipline were important factors when counseling them to take interactive classes. Cooperation among districts and buildings was essential and school calendars and daily schedules should be as similar as possible. Special attention should be given to procedures for technical failures, exchanging written materials, completing lab work and defining discipline procedures.

INSERVICE AND INSTRUCTION

Participants felt most strongly about providing adequate inservice training to teachers and principals. They noted that approximately three days of introductory inservice training was necessary for new teachers and for experienced teachers to interact annually with other teachers from across the state. Participants noted that interactive techniques, materials and collegial support were not available at regular education conferences.

Another essential factor was the need for coordinated curriculum and instruction planning across districts and buildings. Accurate course descriptions and curricula needed to be agreeed on by all participating districts. The sequence and standardization for advanced courses offered on interactive television required special attention.

CLASSROOM EQUIPMENT

Participants agreed that interactive television classrooms needed to have classroom telephones to provide alternative communication in case of an emergency or equipment failure. They believed that a videotape recorder should be in each classroom to provide subject matter, record special events, tape distracting student behavior and especially to record their own teaching to review for improvement. Facsimile machines were very helpful.

Participants wanted equipment standardized so that teachers would need to learn only one kind of equipment and inventories of spare parts could be smaller. Standardization would also permit corrections of adjustments by students in remote locations. Finally, and most importantly, standardization would allow any location to serve as the originating site thus providing flexibility for the teacher to originate classes at different locations during the year and have contact with students in remote sites.

POLICY IMPLICATIONS — INTERACTIVE TELEVISION

Distance learning through interactive television is a viable means for providing low incidence courses otherwise unavailable to students if appropriate inservice training is provided for teachers and technology is seen as a means for improving education rather than an end in itself. Technology should be used when it improves learning opportunities and quality and not as a public relations gesture or an educational fad.

For too long, geography and size of district have been major determinants of educational quality. This technology removes some of the excuses for lesser educational opportunities in rural areas. This technology is expensive. Under average conditions, an initial investment of $75,000 per district is necessary. However, given the need to equalize educational opportunities for all students, the investment is appropriate.

The use of technology in society will increase and schools need to reflect that fact. However, given our crowded curriculum, educators must find ways to maximize the uses of technologies. It doesn't matter if educators have sophisticated equipment if what they teach should never have been taught at all. If educators want to improve education, they need to understand that technologies are only delivery systems that do not ensure quality learning. Schools exist to help students learn to learn so that when they leave formal education they can continue to learn.

Technology needs to be used to individualize and improve education, not as a cheaper assembly line. Educators must determine whether to use technology to meet individual needs or as a tool to reinforce conformity. Allowing for individual differences is especially critical when educators are concerned with higher order thinking.

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Tutored videotape instruction: Implications for the continuing education of the people at work

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INTRODUCTION

Early in the seventies scholars at Stanford University developed a new method of instruction for the continuing education of engineers working away from the campus in industries, called Tutored Videotape Instruction (TVI). Gibbons et al. (1977) carried out a series of experiments from 1973 to 1976 to evaluate the method's educational effectiveness. From the results of these experiments and the experience of three years operation of the programme, they concluded that "the TVI technique is at least as effective as either classroom instruction or live TV with audio talkback for both on-campus and off-campus students." This success led the Stanford University to incorporate TVI courses into an accredited graduate programme in 1976. Since then enormous development has taken place in offering videotaped courses for the continuing education of engineers in the U.S.A. Its magnitude can be judged from the fact that in 1983–84 the Association for Media Based Continuing Education of Engineers (AMCEE) — a consortium of 25 engineering universities — was using TVI successfully to provide more than 435 videotaped courses in 18 engineering disciplines to engineers working in industries and government all over the U.S.A. (Stephen, 1984).

Facinated by this videotape course development Stephen (1984) not only titled his survey paper as "The video-taped course revolution" but also strongly recommended the adoption of this approach for the continuing education of engineers in the U.K. It is surprising that this approach has not received proper attention from the media pedagogues in distance universities. In this paper I discuss what it offers to distance education in general and its implications for the continuing education of people at work in particular.

TUTORED VIDEOTAPED INSTRUCTION (TVI)

Tutored Videotaped Instruction (TVI) is a method of self learning which combines the positive features of the lecture with the benefits of group learning. The method utilizes unrehearsed and unedited videotape recordings of normal on-campus classroom courses delivered by eminent professors, usually called "candid classroom videotapes" (Hutchinson, 1982). A candid classroom videotape "is a faithful and reliable video recording of a normal on-campus class free from any distractions caused by the typical studio environment such as bright lights, the proliferation of cameras and other equipment, and the rigorous technical quality controls as cuts, retakes or editing usually associated with commercially produced television programmes" (Rathore, 1987). The candid classroom videotape, when replayed, simply acts as an electronic medium to extend the walls of the original on-campus class of a professor.

These courses, in the form of candid classroom videotapes produced at very low cost, are mailed along with printed instructional material to off-campus students working in industries. The industries provide the infrastructure and facilities because they want their employees to take these courses.

In these industries "the videotapes are used for the instruction of small groups of students (typically three to 10) who are assisted by a para-professional tutor as they watch the tape. For this reason the method is called Tutored videotape instruction (TVI) (Gibbons et al., 1977)". The tutor may be well versed in the subject but this is not an essential condition. Normally chosen is a senior colleague interested in helping the students. The main role is to foster group discussion and self learning by taking advantage of the video playback's unique feature that it can be stopped, replayed or viewed at high speed at any time the student wishes. The TVI method "is based on the common sense notion that the students can learn more from a lecture if they are free to interrupt it at places where they need more discussion or explanation of a point or concept" (Gibbons et al., 1977). Experience of the researchers in Stanford has revealed that students learn best when the videotape is stopped every five to ten minutes for a period of 3 to 5 minutes. In this way the problems and issues are normally resolved by the group through mutual discussion. The questions that the group is unable to resolve are referred back to the course professor by telephone for answers.

PROMISES FOR DISTANCE EDUCATION

The Tutored Videotape Instruction, besides incorporating the general benefits that the video format has over broadcast television (see Bates, 1984, and Brown, 1984 for a discussion of these benefits) helps to solve some of the problems facing distance education:

MATCHING STUDENTS' TRADITIONAL LEARNING HABITS

Dependence upon the delivery of the teacher: hearing, seeing, questioning, and then corroboration with the help of books can be considered as the traditional learning habits of students who have been following this pattern from the day they entered school. Distance education (which is at present dependent mainly on printed material) assumes that the student will abandon his traditional learning habits and acquire (from where?) a capacity of "self directed learning" to master the knowledge and skills contained in the printed reading material. Is the present student capable of doing so independently? Has the present system of education prepared him for this type of self reliance in learning?

We have done no significant research to answer this question. Instead, the rise of the distance universities has produced books with such titles as "Methods of independent learning", "Guide to self studies" etc. Perhaps the distance students buy these guides and read them. However, the question remains whether these books enable them to become self reliant learners and supercede their old learning habits? Psychological theories of habits reveal that it is not so easy to get rid of stable habits.

Tutored Videotape Instruction matches the learning habits of the students by combining the positive features of the lecture with those of small group learning. The videotaped lecture provides the basic missing element in distance education, namely the teacher's delivery, which is essential to give depth and continuity to the subject matter. The small group tutorial discussion, on the other hand, affords a means of making the lecture respond to individual needs and differences. The TVI students hear not only the questions, comments and discussion of the on-campus students, but they stop, the tape whenever a difficulty is encountered and resolve it through mutual discussion.

NOT AN ISOLATED LEARNER

Learning in isolation is a major cause of dropping-out or discontinuing distance studies. Tutored Videotape Instruction being a group learning technique not only removes this feeling but "in effect... permits the students and the tutor to manage the lecture themselves and thereby create an intellectually stimulating environment which enhances learning and creates a positive attitude towards the subject" (Gibbons et al., 1977).

KNOWLEDGE INTEGRATED WITH TEXT

A crucial factor for learning is the way knowledge is structured and presented. The structure of knowledge in most of the studiomade videotapes or broadcast programmes is presented in documentary style (probably because it exploits the full potential of television). Bates (1984) considers these programmes to "have very important higher education objectives. They attempt to give students the opportunity to practice high-level learning skills, such as analysis, application of abstract principles to the real world situations, evaluation, and generalization". But the Open University (U.K.) experience shows that students often have difficulty relating these programmes to the text and misinterpret them for lack of the skills required to achieve the intended learning goals (see Bates and Gallagher, 1977, and Brown, 1984). These problems are least noticeable in the case of didactic and highly structured classroom delivery where the teacher presents knowledge integrated with the previous experience of the students and proceeds in a sequence determined by the specific learning objectives related to the text. Since the Tutored Videotape Instruction (TVI) utilizes candid classroom videotapes which are the extension of a normal classroom, students should not face the difficulties associated with documentary style videotape programmes.

AN END TO PASSIVE OBSERVATION

Another frequent problem with studiomade, documentary-style video programmes is that they encourage passive observation among students and are poor in feedback. Brown (1984), writing about future developments in video cassette design noted that "two distinct forms of video cassette design seem likely to emerge. The first for the group use, will stress open-ended analysis and discussion with fellow students or tutors. An example of this form is tutored video instruction (TVI)...". The TVI has already been found educationally and organizationally effective and economic. For example, Gibbons et al. (1977) found that electrical engineers studying with TVI out-performed the on-campus regular students with comparable qualifications and noted that "it is (or can be) educationally more effective than either classroom or televised instruction, especially for marginally qualified students. This is primarily because it permits students to ask more questions and, through organized discussion, to find more answers for themselves than they could in either of the two formats".

EXPOSURE TO THE BEST IN THE FIELD

The TVI not only provides distance students the opportunity to hear and see the teacher, but also exposure to the best specialist on the subject in the world. For example, it should be possible to identify specialists who are also considered teachers of exceptional repute and to make video recordings of the classroom delivery of these teachers. This approach, besides providing exposure to the students of the best available in the field, will also make these videotapes more attractive and motivating to the students as they will have the proud feeling of being taught by such an expert. This feeling is very important in distance education.

PROVIDING PRACTICAL EXPERIENCE

One of the major hurdles in the way of introducing science and technology courses in distance universities is the provision of practical laboratory experience in these subjects. As the tutored videotape instruction takes place at work normally with its own laboratories, the student can do practicals there. Further there is more opportunity to apply theoretical knowledge at work and gain practical experience.

EASY AND ECONOMIC PRODUCTION

The production of viedo material in the majority of distance universities is in the hands of professional media experts who influence the design of the material greatly. This may be desirable from the point of view of quality but has resulted in what Bates (1984) calls "the distancing the teacher from the design of the programmes" and has been a source of conflict and dissatisfaction among subject experts. Further, the cost and the time requiered to make a polished TV/video programme in the studio is high. It may take months to make one programme in the studio because of the quality restrictions imposed by the media experts. It takes just 50 to 60 minutes (length of the lecture period) to produce a candid classroom videotape and there is no interference by the media experts. Of course, media experts will criticize these videotapes for their poor visual and sound quality. However Stephen (1984) observed in this context that "One can always rely on Americans to seek value for money. Their requirement is for the information they need, as quickly and conveniently as possible, at minimum cost. Any unnecessary improvement in quality results in delay and increase in cost". If the courses, their quality and level of content are appropriate to the viewers' needs then the poor sound and visual quality will soon become acceptable as the cost and time involved in production are much less.

IMPLICATIONS

After three years of successful operation and experimentation Gibbons et al. (1977) found TVI to be effective for giving instruction in engineering and science subjects but they were cautious about generalizing and observed that "our data do not permit a rigorous statistical test... We are also unable to generalize to subject areas other than engineering and science, though we believe the general principles of the TVI format will apply to a wide range of subjects and audience". However, they listed the following factors as critical to the effectiveness of the TVI format for other subjects and audiences:

1. The attitude, personality, and instructional style of the tutor are very important. The tutor should be interested in helping the students of this group and should attend the videotape sessions. Competence is important provided the tutor is not so overqualified as to become bored or impatient with the students. Compensation of the tutors is important for a continuing program.
2. Group size is also very important. If there are fewer than three students opportunity for effective interaction is lacking and the method tends to be expansive. Group size greater than eight to 10 tends to inhibit discussion and reduce the frequency with which the tape is stopped. A group size of three to eight seems optimum, although this can vary with student personalities.
3. Depending upon the maturity of the students, commitment to a degree program or similar educational objective seems to be important for sustaining interest and motivation. Certainly for most students completion of graded problems and examinations results in a more productive educational experience.
4. Active classroom participation in the live class is desirable. For the subjects and audiences served to date, unrehearsed, unedited videotapes of classroom lectures may be used and, in fact, may have more "presence" and be more interesting to watch than tightly scripted, professionally produced lectures.
5. It is important that the instructor be well organized, knowledgeable in the subject, and free

from annoying mannerisms. The charisma of a good instructor is emphasized on the videotape.

6. For students employed in industry, attitudes of management play a very important role in the success of a continuing program. Job pressures that create long hours and interfere with family life markedly increase the difficulty of pursuing an educational program.
7. Continued management and evaluation of a TVI program needs to be the concern and principal responsibility of a designated person who should provide liaison between the academic institution and the TVI students. Many details require timely attention that would otherwise not be given by either the instructor or the company.

None of these factors present unmanageable requirements. The distance universities have the organization and manpower to provide good quality recorded and printed supplementary material, to evaluate the programme, and to conduct examinations. On the other hand, the explosion of knowledge and the decreasing half-life of new knowledge challenge modern business and industry to keep pace with change. To continue to exist they have to keep their employees abreast of new knowledge and developments. At present industry meets this challenge in a variety of ways: release time for studies, contractual relationships with institutions of higher education, and internal staff development programmes, often including on site learning laboratories etc. Industry has to depend upon institutions of higher education and universities which, because of their research function, are in a better position to deliver current knowledge.

The part time courses of most distance universities are traditional in nature and are not seen by industry as suitable. Sophisticated managers, executives, and technical workers represent a different kind of student group. Besides the latest theoretical knowledge, they need to apply it to improve productivity and efficiency. For the distance universities to meet successfully their promise of providing continuing education for working people, they must not only produce course material at the frontiers of knowledge but also adopt methods of instruction that encourage the application of knowledge to practice. TVI not only enables working students to study courses taught by the best people but also allows them to put knowledge into practice in their work because instruction takes place at work.

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Distance education in West Germany — A developing concept, seen through the DIFF's perspective

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Although the earliest German forms of distance education go back to the middle of the 19th century it experienced a kind of renaissance and modification in the 1960s. Its original German was below the academic level and firmly rooted in private or syndicate initiatives to help people improve their general education and their vocational chances. West German institutions of higher learning did not take notice of it in either teaching research.

The discovery of distance education by higher education in the sixties came from outside and lay in a remarkable shift in the educational policies of the 11 Länder a shift forced on politicians by far-reaching economic, technical and societal changes. The close connection between economic growth and the qualification level of the labour force was understood even by our politicians. To improve qualification levels, especially of the professions and middle management (Facharbeiter), many more highly qualified teachers were needed. Experts in the sixties spoke of an educational emergency! Numerous new schools, universities, polytechnics and adult education institutions indeed led to a dramatic shortage of teachers in certain subjects, schools and levels. The universities faced a sharp increase in student numbers which was called the "student-mountain" and became mass institutions instead of elite institutions for the highly gifted few. The contradictions of this long and painful process endure today. In this almost desperate situation distance education was considered to be a panacea, provided it did not change the general educational and societal structures but took the students from the campuses or more importantly from the streets, and achieved the same academic standard as traditional studies.

In 1963 the Volkswagen Foundation began organizing expert meetings on teacher in-service training by distance education and then secured financing for five years for the "Deutsches Institut für Fernstudien an der Universität Tübingen" (DIFF), which was established by the Ministry of Culture Baden-Württemberg and the University of Tübingen in February 1967.

The DIFF had to start from scratch and was free to develop its own concept of distance education provided it would remedy the problems mentioned above. From the start teacher in-service has remained DIFF's main task. But it emphasized economics less than the politicians expected. Cost comparisons between traditional and distance teacher in-service training proved soon to be extremely complicated and of secondary importance.

DIFF saw its main task as developing specific didactic approaches ("didactic" used in the wide German sense of general theory of education) and evaluating them. Because of the dense educational infrastructure in West Germany DIFF had to develop an organizational model to avoid unnecessary competition with the existing teacher in-service institutions or universities. Its answer is the "DIFF model", a cooperative approach which divides work between DIFF and its partner institutions. DIFF is responsible for needs assessment, development of study materials, evaluation and research. DIFF's partners cooperate in need identification and development, integrate DIFF study units into their courses, and thus gradually add distance education components to their regular work (Moore, 1987:40). This model implies drawing in academic expertise to DIFF by employing academic advisory boards and course authors from all over West Germany, with DIFF concentrating the work of its course teams on supporting these external authors and re-shaping their manuscripts to its own didactic vision of distance education for adult learners. DIFF had also to prove that distance education was academically equal to traditional studies. It therefore developed specific evaluation models suited to the context of its work and the DIFF model. It also developed concepts of media mix and researched them with samples of more than half a million participants in its 25 Radio and Television Colleges. Adult education and its insights into learning was considered of paramount importance, but in the first years it had little practical consequence. DIFF's theoretical publications, which make a remarkably long list, (48 monographs in its book series, 46 research reports, hundreds of articles in periodicals; Delling 1977 and 1982; the 3rd volume of this bibliography is in press), try to conceptualise and communicate its views of distance education and to apply experiences and results from outside.

Between 1972 and 1979 DIFF was financed by the 11 German Länder and in 1979 the Federal Government began contributing too. This means that distance education in Germany is considered by the authosities to be a task of national importance. However, distance education's role and organization in West Germany became controversial in the Länder and the universities. Various commissions discussed this issue without reaching a conclusion while DIFF increased its influence, especially on teacher in-service although less convincingly on the universities, and enlarged its developmental work and course production. Its techniques for the construction and evaluation of developmental models as cooperative enterprises became more polished and the numbers of academicians involved in distance education increased considerably.

But the more DIFF worked in its familiar context the more it became obvious that the context itself had changed considerably, with massive implications for DIFF's concept of distance education. New demands for continuing education, new topics transcending discipline boundaries and the changing role of modern high tech media all opened up new possibilities but forced DIFF's concept of distance education to adapt to these developments. All this occurred in a complicated political situation with decisive consequences for the future of distance education in West Germany. By 1974 it was evident that plans for a central distance education organization in the FRG had failed. Instead we now have three different organizational models: the Fernuniversität Gesamthochschule Hagen as a university of the Land North Rhine Westphalia, but also taking students from other Länder; the DIFF as a national research institute; and a few smaller units closely affiliated to universities concentrating on one subject only and working at a local level.

The modified DIFF concept of distance education is as follows:

- DIFF's central task is continuing education for adults, which is the key educational challenge for all levels sectors for the foreseeable future. Each sector will define its specific contribution to continuing education according to its work profile. Universities and other institutions of higher learning must also accept this task if they want to remain a serious educational factor in the future. DIFF has agreed to support them by bringing into the marriage its 21 years of experience and expertise.
- If the agreed aims of continuing education are to be attained, non-traditional open forms of learning are needed to supply German adults with adequate opportunities. This means that DIFF's traditional target groups: teachers, lecturers in adult education, people interested in general education, have to be complemented by other groups, e.g. trainers in economic/industrial enterprises, economists and other, wanting to specialize in a particular subject not available from traditional educational institutions. General education below the expert level remains important and has also to be further developed.
- Adults often feel a barrier to institutional learning, even if they can find opportunities just round the corner. They more frequently choose distance education as a mode of learning which offers them enough freedom to learn the way they want to and at the same time gives them as much support as they need. By means of the new media this problem can be solved technically if adequate educational concepts are available (Catchpole 1986:129; Foks, 1987:35; Garrison, 1987:95; Moore, 1987:59). Adaptive feedback is an example of a progressive technology in DIFF's work.
- Distance education as one form of open learning aims at the self-directed learning of adults. Acquiring the skill of self-directed learning is part of the learning task. So both content and procedural knowledge are needed in *any learning process*. As learning differences among adults are considerable (much higher than with younger, students), individualization is important to DIFF. Ready-made learning strategies are almost useless, we need strategies made to measure, built up by the learners themselves and supported by distance education courses and tuition. If the concept of "industrialization" has ever played a role as a *context factor* in distance education (never as a *theory*), then it is high time to use modern distance education concepts as a counterweight against its possible inhuman consequences. (Evans/Nation, 1987:48; Moore, 1987:59). Learning as a personal development (Wright, 1987:3) is never a mass product!
- All DIFF study projects are conceived as models of teaching-learning. This means that study units are only one factor in DIFF's work; at least as important are the curriculum decisions, the didactic instruments used, the procedural and meta-knowledge needed to learn in an optimal way. The model is a sort of essence of DIFF's insights, formulated in a consistent pattern of the assumed interactions between learner, content, support system, personal tutor, and context factors. DIFF's intention in this approach is to help other educational institutions by publishing these models: they allow transfer of insights and didactic techniques very easily.
- The tasks ahead are of such dimensions that close cooperation among all those using distance edu-

cation of open learning is essential. In spite of the different organizational models in West Germany DIFF seeks close cooperation with the Fernuniversität and other institutions of higher open learning in Europe and elsewhere.

DIFF as a research institute is essentially interested in theoretical aspects of open/distance learning. I don't think that there is comprehensive distance education *theory* in sight and I am against homespun distance education "theories" as a sort of game among ourselves. Our research context is the *wide educational field of continuing education* and all the academic disciplines working in this field, e.g. andragogy, philosophy, subject field educational theories (Fachdidaktiken) etc. Instructional science with *cognitive* psychology and sociology of knowledge have a special role in helping us to form theoretically well founded models of teaching and learning as the theoretical nuclei of our work. Part of these models are tutorial elements, personal and computerized, allowing us for example, to combine highly individualized adaptive forms of feedback (thanks to intelligent tutorial systems) with centrally developed high standard study materials. We have still a long way to go, but I think we are now on the right track.

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Contact North/Contact Nord: A model for distance education project administration

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INTRODUCTION

On October 20, 1986, the Government of the province of Ontario confirmed a commitment made earlier that year by announcing a 20 million dollar (Canadian), four-year distance education pilot project for Northern Ontario.

The government's objectives were the following:

1. to improve access to formal educational opportunities at the secondary and post secondary levels for residents of Northern Ontario
2. to establish a long-term capacity to improve access to other training and informal educational opportunities
3. to meet the ongoing and emerging educational needs of residents in communities remote from conventional delivery technologies
4. to meet the special needs of francophone and native peoples in Northern Ontario
5. to create new and expand existing expertise in the design and operation of technologically enhanced distance education programs in Northern Ontario
6. to create models for the alternative delivery of educational services capable of:
   a) application more broadly through Ontario
   b) application to the needs of other jurisdictions, including developing countries
7. to create a "test-bed" to evaluate the effectiveness of various technologies in delivering distance education.

Several aspects of the Northern Ontario Distance Education Access Network project which are unique provide the focus for this paper: its administrative size and structure; and its emphasis on collaboration within and across several levels of the Ontario education system and several government ministries.

THE ENVIRONMENT

Northern Ontario covers an area of 313,000 square miles with a population of approximately 800,000 (1981 census). It includes 90% of the province's land mass, with only 10% of the population. The two largest population centres are Sudbury, with 115,000 people and Thunder Bay, with 112,000. The area suffers from high unemployment, resulting partially from increasing mechanization of a largely resource-based economy. Its widely scattered population is multi-cultural, with the largest representation being francophone (30% of the area's population). In addition, 22% of Canada's status Indians and significant numbers of non-status and Metis natives also live in Northern Ontario. The region has two universities: Laurentian, in Sudbury, with 4,000 full-time and 2,500 part-time students in September, 1987 and Lakehead, in Thunder Bay, with 3,000 full-time and 2,000 part-time students. Laurentian is the major university in a system of on-campus federated church-based colleges and affiliated university colleges in Sault Ste Marie, 300 kilometers west of Sudbury, Hearst, over 600 kilometers north and North Bay, 120 kilometers east. (Figure 1.) Prior to 1987, Laurentian had the only university-level distance education program in Northern Ontario. It dated from 1972.

The region also has five community colleges, established in 1967: Confederation in Thunder Bay; Sault in Sault Ste Marie; Cambrian in Sudbury; Canadore in North Bay; and Northern in Timmins. They are each responsible for specific territories and several have substantial off-campus operations. Confederation has been involved in distance education since 1979.

At the secondary level, the Ministry of Education has regional offices in Thunder Bay, Sudbury and North Bay to serve over 30 school boards distributed across the region. None had ever been involved in distance education and because of the small populations, several were unable to offer complete curricula to their students. The Ministry is also responsible for the Independent Learning Centre which offers correspondence courses in both English and French to over 160,000 students annually.

THE MANDATE

Distance education was seen by the government to be a feasible method of improving access to and meeting a growing demand for increased educational opportunities at both levels. The demand grew from the following needs: to re-train sectors of the labour force displaced by mechanization; to increase the general educational level of the population; to attract new industries; and to meet the challenges posed by the well-documented educational disadvantage of minority groups. The decision was made that the project would have to serve all levels of education.

The concept of one network to serve several levels of the formal educational system posed organizational challenges and generated considerable interest within government and externally. A fairly complex structure was therefore adopted.

THE ORGANIZATION

To implement the project, the North was divided into two regions, northeast and northwest. Regional co-ordinating centres were established in Thunder Bay and Sudbury, to administer a network of remote access sites located in communities chosen by the Ministry of Northern Development. The network portion of the project was named Contact North/Contact Nord.

To ensure that the project was indeed northern in its administration and that it was adequately supported, the government contracted jointly with Lakehead University and Confederation College in Thunder Bay and Cambrian College and Laurentian University in Sudbury to set up the co-ordinating centres and oversee them. Such close collaboration on a major project was unusual. To advise the contractors, two regional advisory boards were announced by the Ministry of Northern Development, each composed of representatives from the university, college and secondary systems, as well as a matching number of people from the communities at large.

Staff were hired in each regional centre to provide assistance in areas of instructional design, liaison to the secondary, native and francophone communities as well as technical and administrative support. Monies were also provided to each centre to contract out research projects related to distance education and a major evaluation of the project is being funded by the government.

During the planning process, several government departments became involved, with the lead gradually being taken by the Ministry of Colleges and Universities, and Education and Northern Development also being heavily involved. Two committees were eventually struck: the Provincial Management Group, consisting of five senior civil servants; and the Project Management Committee, consisting of representatives from seven ministries and the Ontario Educational Communications Authority, personnel from the four northern contractors and the two regional co-ordinating centres. The Ministry of Colleges and Universities chairs both committees.

THE MARKET

Contact North/Contact Nord exists to serve two different constituencies: institutions offering courses and the general public wanting to take those courses. However, this double mandate has created challenges in personnel and resource allocation.

Twenty-seven communities were selected by the government in May, 1987 as the initial network, with part-time co-ordinators hired and trained in each community. Office and classroom space was donated in each community by the college and secondary school systems. Equipment installed included audio-teleconferencing bridges in Sudbury and Thunder Bay and audio-conferencing terminals. IBM computers and printers, VHS playback units and monitors and facsimile machines at the access sites. Over 40 courses at all three levels launched the network in September. Contact North/Contact Nord was established as a distribution network for courses and information. It does not plan or develop courses, nor are the site co-ordinators community development officers, although these have both been areas of contention.

THE FUNDING

The 20 million dollars is divided into four annual allocations of five million, of which three million is divided further between the two regional co-ordinating centres for the network and the final two million is in a separate, Northern Distance Education Fund. This is another unique aspect of this project, in that the government designated money for program development, not just for hardware. The NDEF provides funding for the development of full degree, diploma or certificate programs, not individual courses and priority is given to collaborative projects. Grants have already been made for a BSc in Nursing, a BCOMM in French, a program in native community care and a certificate program for teachers of adults, to name only a few of the 40 projects approved. The impact of this level of development on distance education in the province as a whole will be extensive.

THE FUTURE

This pilot project ends on March 31, 1990. Decisions on its future are expected in the fall of 1989 after the evaluation processes are completed. A major issue to be addressed will be the collaborative process, in program development and in the administration of the network. There is no doubt that when resources are scarce and existing institutional mandates can be preserved, sharing makes sense. However, close collaboration requires extra financial resources and institutional and personal commit-

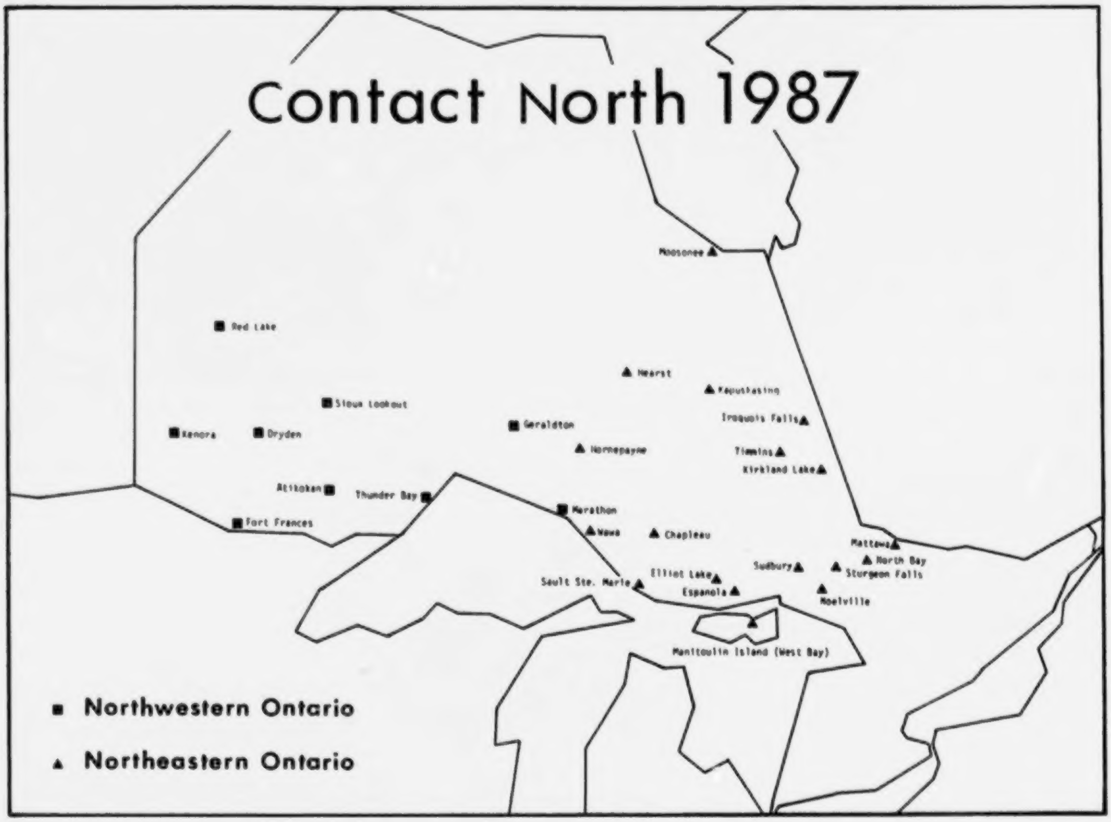
Contact North 1987
Moosonee
Red Lake
Hearst
Kapuskasing
Sioux Lookout
Iroquois Falls
Kenora
Dryden
Geraldton
Hornepayne
Timmins
Kirkland Lake
Atikokan
Thunder Bay
Marathon
Fort Frances
Wawa
Chapleau
Mattawa
North Bay
Sudbury
Sturgeon Falls
Elliot Lake
Sault Ste. Marie
Espanola
Noelville
Manitoulin Island (West Bay)
■ Northwestern Ontario
▲ Northeastern Ontario

Figure 1.

ments. Regardless of the long-term decisions taken, collaboration has been remarkably successful to date, as a 27-point network offering 40 courses was created in less than one year and 40 major development projects were funded.

Such an achievement requires considerable institutional support. That Contact North/Contact Nord has come so far in such a short time speaks to the need it has begun to fill and the fact that both institutions and individuals have been prepared to learn new patterns of co-operation to achieve mutually beneficial goals.

ABOUT THE AUTHORS

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Pam Derks is the Dean of Continuing Education at Cambrian College and the contractor for Cambrian.

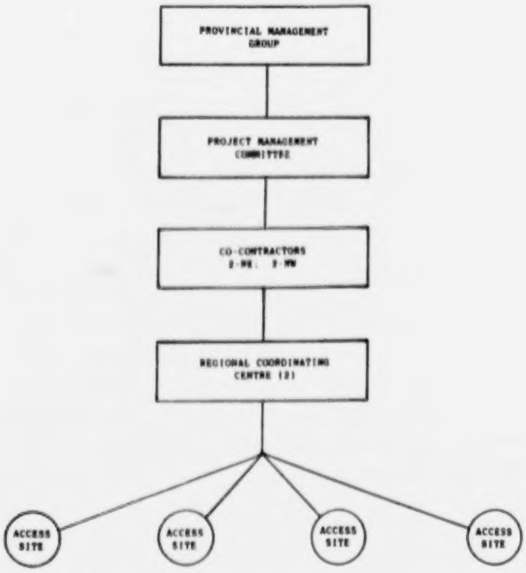
PROVINCIAL MANAGEMENT GROUP
PROJECT MANAGEMENT COMMITTEE
CO-CONTRACTORS 2-NE; 3-NW
REGIONAL COORDINATING CENTRE (2)
ACCESS SITE
ACCESS SITE
ACCESS SITE
ACCESS SITE

Figure 2. CN/CN Projekt Organization

The use of electronic mail in distance education

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PREAMBLE

One of the most common problems faced by external students is that of isolation. This isolation from fellow students, teaching staff and the teaching institution creates problems which include delays in receiving feedback and difficulty in making contact with the right person to obtain answers to important questions. This can lead to high levels of student frustration and eventual drop out. Hence any technique which can reduce the feelings of isolation and improve communication between staff and students, or between students, is worthy of consideration.

One such technique is electronic mail. In the Australian context, Telecom's TELEMEMO service makes it possible to send or receive messages anywhere. All that is needed is an appropriate terminal with the ability to connect to the normal telephone lines.

This report provides some details and results of a trial use of Telememo by a selected group of external students enrolled at Brisbane C.A.E. in Semester 1, 1987.

SOME BACKGROUND FACTORS

Brisbane College of Advanced Education has approximately 1,600 external students, most of whom are teachers enrolled in courses at degree or graduate diploma level.

Telecom is Australia's national provider of telephone services. Telememo, Telecom's electronic mail service, has since been incorporated into an expanded service call Keylink.

Most external students of Brisbane C.A.E. are resident in Queensland, Australia's second largest state in geographical area, and its most decentralised. Many schools in Queensland already have access to Telememo and all regional education offices have been connected to the service. This implies that increasing numbers of teachers, particularly the more isolated can use electronic mail. The number of college staff gaining experience with electronic mail, including Telememo, is increasing. Because most, if not all, schools in Queensland are equipped with microcomputers, most of the college's external students have access to a microcomputer, although not all have access to a modem.

All students who enrol in the college's Graduate Diploma in Computer Education course must have ready access to a microcomputer. Such students also have a particular need for prompt answers to problems because even a small program "bug" can produce unacceptable delays in completing computer assignments or projects.

Staff involved in offering the Graduate Diploma in Computer Education course were not only keen to become more active users of electronic mail themselves, but were also keen to foster the use of the technology among all students, whether they were on campus or external.

Although staff were philosophically committed to the use of the new technologies where appropriate, there was understandable reluctance to make electronic mail an integral part of their teaching methodologies until they had answers to some key questions. For example:

- how many students would use it?
- how often would students use it?
- would the workload of staff increase or decrease?
- should there by any restrictions placed on the use of the system?
- how effective would the technology be in helping to remove fears of isolation?

and probably most important of all,

- how much would it cost?

The Co-ordinator of External Studies was a member of AOLIN (The Australian Open Learning Information Network) and was aware of the infrastructure that had been developed and of the assistance that was available to assist those wishing to experiment with electronic mail services.

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ELECTRONIC MAIL — A NOTE

An electronic mail system involves the transmission of messages electronically rather than by post. Normally, electronic mail services make use of existing telephone lines. Subscribers to electronic mail services are provided with a mailbox which has been described as taking the place of existing office furniture! There are in trays and out trays for unread and read messages and files for storing received messages. There may be one or more bulletin boards that allow the user to reach, or be reached by, other users quickly and there is normally a "cabinet" for storing directories and distribution lists. There is even a "bin" for discarding unwanted messages.

The user of an electronic mail system myst have easy access to a computer or communications terminal. In practice, and for most users of such services in Australia, communication is via a microcomputer equipped with a modem and appropriate communications software. Messages may be sent directly via keyboard entry once connected to the system or they may be prepared off-line on disk and subsequently uploaded when on line. (This latter procedure is usually much better because it is cheaper since, in general, most of the recurrent costs associated with the use of electronic mail are a function of the time spent connected to the systems.)

Once connected to the system the user is advised of any mail that has been received. This may be read in full or scanned and, if necessary, retained on disk or printed out as hard copy. Similarly, the user can check any bulletin boards by scanning headings and/or by reading full messages. These too may be saved on disk or printed out as required. Messages may be answered immediately or may be saved for answering at some future time.

THE AUSTRALIAN OPEN LEARNING INFORMATION NETWORK (AOLIN)

AOLIN is an Australian based, independent and self-supporting network of groups and individuals with a common interest in the use of information technology for communication, teaching, research and administration at the post-secondary level. Members of AOLIN communicate with each other via Telememo. This service allows the exchange of electronic mail messages and telexes between those with access to Telecom Australia and to other national systems supported by Telecom. The three main objectives of AOLIN are to:

1. Facilitate personal development in information technology.
2. Act as a clearing house for information technology research, news and literature.
3. Support systematic evaluations of information technology.

Not only does AOLIN provide easy access to electronic mail facilities, it offers a number of other central services. These include:

- detailed on-line directory of members;
- a public bulletin board for announcements of general interest. (Any member can add notes to the bulletin board and outdated notices are removed by the board manager.)
- an electronic newsletter of educational research being undertaken in Australia and overseas;
- periodic computer conferences in which any members may participate;
- user training in the techniques and management of electronic mail and computer conferencing;
- a source of advice and assistance to members and potential members.

THE TRIAL

All 75 external students who were accepted for enrolment in the Graduate Diploma in Computer Education for the first time in Semester 1, 1987 were advised about the electronic mail trial. They were further advised that if they wanted to participate in the trial they had to contact the college, but only the first 20 to submit their names could qualify. Modems were available for hire at a nominal cost (AUS $25) for the semester.

Soon after the semester commenced 20 students had agreed to participate and 6 of these hired modems (and related software) from the college. As the semester progressed it became possible to add other students to the system so that by the end of the semester 22 were enrolled.

Participating staff, of whom there were 7, were enrolled in a separate division of AOLIN and the students were enrolled in their own sub division. (This sub division in turn could have been further divided into sections and subsections, but this option was not exercised.)

All participants were provided with comprehensive and detailed information about AOLIN and how to access the system and read, and store messages. Each user had his or her own individual mailbox secured by a password. In addition, two bulletin boards were established, one being accessible to both staff and students and the other being accessible to staff only.

Staff and students were given different user profiles which defined their access limits and the facilities available to them. One of the lecturers associated with the course accepted the position of system administrator whose task was to continually monitor system usage and make changes where considered necessary. For example, the administrator could restrict access to bulletin boards, limit those to whom messages could be sent or from whom they could be received, control storage of mail, purge

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outdated information (storage costs money!), add and delete users, and exercise a number of other controls on the system.

One important privilege given the staff was that they were permitted to receive messages form, and send messages to, any mail box in the entire Telememo system, whereas students were restricted to use within the division only.

Because all external students enrolled in the course could not be included in the trial, care had to be exercised to ensure that those students not participating were not significantly disadvantaged.

In practice this meant that lecturers had to restrict their messages to those relating to the use of the system and to replies to specific requests. All messages relating to course content had to be initiated by students themselves.

In order to assist with the evaluation of the project, participants were provided with forms on which they were asked to keep details of messages received and sent and of the time spent on the system. They were also provided with a brief questionnaire to be completed and returned at the end of the semester.

RESULTS

Of the 74 students invited to participate in trial only 22 agreed to participate even though the deadline for the receipt of replies was extended. At the end of the semester the total number of students still enrolled was 46, indicating a dropout rate of 38%. However, only one of the 22 students participating in the trial had withdrawn. One can only speculate on the reasons but it cannot be assumed that participation in the trial reduced the likelihood of withdrawal. Perhaps it is more likely that the more enthusiastic and committed students were the ones who agreed to participate in the first place.

A questionnaire was sent to all students who did *not* participate in the trial and 12 responses were received.

The items posed and the responses were as follows:

i) The reason that I have not used Telememo is (Please explain briefly):

a) lack of modem	7
b) lack of access to computer	2
c) modems supplied from college are not compatible with the Apple computer	2
d) lack of courage to try something new	2
e) I did not think it would help my study	2

Note: Some students selected more than one reason.

ii) Next semester/year I will/will not be using Telememo:

Will use next semester	4
Will not use next semester	5

iii) The following conditions have to be satisfied before I can use Telememo.

Three students indicated that they would wait until their school obtained a modem, but the majority were hindered by the financial and practical reasons, e.g. computer downstairs whereas telephone upstairs; using a friend's computer or a computer in a study centre; limited budget and cannot afford to hire/buy a modem.

The results of the questionnaire sent to those students who *did* participate in the trial are summarised below:

No. of participants	22
No. of responses	10

1. In general I found the use of Telememo in the subject of (please circle one):

Great help	4
Some help	6
Little help	–
No help	–

2. The area/s in which the use of Telememo was helpful is/are the following (please explain briefly):

Responses included: sharing ideas (6); providing quick and easy contact with lecturers (6); sending and answering pleas for help (3); sharing fears and concerns (1); solving administrative problems (1); having access to information 24 hours a day (1).

3. In my experience the degree of difficulty in the initial learning of the use of Telememo was:

Considerable	–
Limited	5
Negligible	5

4. The source of initial difficulty was the following area(s):

5 students experienced difficulty setting the initial software parameters. (This problem was related to the software provided with the modems hired from the college.)

2 students had difficulty understanding Telememo vocabulary and 2 students indicated they were just "apprehensive about talking to faceless people". One student experienced no initial difficulty.

5. In my opinion the use of Telememo for consideration purposes in the Graduate Diploma in Computer Education has a:

High potential	10
Limited potential	–
Low potential	–

6. The changes/extensions to the use of Telememo

that I would like to use in this course are the following:

Suggestions here included:
- introduce an ice-breaking exercise;
- provide examination information
- provide tutorial updates (?);
- provide hints and helpful bibliographies;
- provide regular weekly schedules with information;
- allow students to submit all assignments by Telememo;
- provide more detailed documentation on procedures.

One student wrote simply that it was "a great service".

Participating students were asked to record their pattern of use of electronic mail in a daily diary. This was meant to include such factors as time of the system, number of messages read and sent, destination and source of messages, and the nature of messages.

Unfortunately, only two students returned their diaries. (Perhaps the others were too busy to help them or did not appreciate their usefulness.) Despite this poor response it was interesting to note that —

a) Students spent between 15 and 45 minutes each week logged on to the system.
b) most messages were sent between students rather than between student and lecturer.

The lecturer responsible for the introductory Unit in the course received more than 60 messages from students and sent the ame number, including replies to students. This was far in excess of the number of messages sent to, or received by, other lecturers.

COSTS

The table below provides some details concerning the patter of use of the electronic mail system and the costs incurred. Costs are in Australian dollars to the nearest dollar. Costs include storage costs and connect time costs.

In addition to the costs shown in Table I, the costs of AOLIN membership for the Semester was $150. Hence, if the unusual expense of $213 incurred by one lecturer is excluded, the total cost of the trial was $1065 which equates to an expenditure of $51 per student.

CONCLUSION

Electronic mail proved to be an effective supplement to the more widely used communication techniques in distance education.

Its use and potential were very much appreciated by those who were involved. The fact that students used the system to communicate with each other

TABLE I

Pattern of Use of Electronic Mail

	Feb $	March $	April $	May $	June $	Total $
Staff Costs	37	350*	131	70	29	617
Student Costs	1	126	185	138	61	511
TOTAL	38	476	316	208	90	1128
No. of Students who used Telememo	2	13	22	17	16	–
Max. Experience per User Student	0.80	22	32	22	9	–
Min. Expenditure per User Student	0.30	1	0.20	0.90	0.03	–
Average Expenditure incurred by Participating Students (22)	0.05	6	8	6	1	21
Average Expenditure per Participating Student (22)	2	22	14	9	3	50

** Includes $213 incurred by one lecturer communicating with others connected to Telememo, but not participating in the trial. These extraneous activities ceased soon after they were detected.*

more than with their lecturers should not be regarded as a disappointment, because it clearly would have assisted in reducing the sense of isolation experienced by most distance education students and can effectively be regarded as taking the place of the face-to-face interaction that occurs between students in traditional on-campus institutions. This factor alone may have contributed to the reduced withdrawal rate of the trial participants.

The trial indicated that electronic mail was a relatively inexpensive way of enhancing communications providing students have access to a computer, modem and appropriate software. However, until it is possible to ensure that all students have access to an electronic mail service, its use will be restricted. Its potential use as a transmitter of information or teaching material, or for providing tutorial and seminar support, and indeed for other functions associated with distance education will only be fully realised when all students and staff have the opportunity of linking in.

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A distance education strategy for Bangladesh

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India

This paper discusses the role of distance education in the context of the Third World with a focus on Bangladesh. Certain geo-political and socio-cultural realities of the Indian sub-continent seem to favour distance education in more than one way. In developing countries, emergence of distance education could be looked upon as a process similar to osmosis. It holds the promise of a new communication process in which new ideas, attitudes and understandings might filter through to the mass of the population.

Bangladesh, with a population of 95 million (Bangladesh Bureau of Statistics, 1984) and approximately 657 persons per square kilometre (excluding the riverside areas), is one of the most densely populated countries in the whole world. Its rapidly growing population suffers from all the problems of poverty, illiteracy and disease associated with the Indian sub-continent.

Most developing countries today have access to various mass media like radio and TV, but the reach of such media varies considerably with the level of development and size of individual countries. Media utilisation varies from country to country as well. The potential audience for mass media in developing countries is huge, predominantly rural and poorly educated. The main emphasis of all educational efforts in a developing country like Bangladesh is to reach out to a vast number of people with a view to making them more productive at the least cost per person. Mass media are well suited to this purpose.

Bangladesh cannot afford the luxury of accepting distance education just because it is a new and widely discussed idea. The high rate of wastage and repetition at all levels of education, the under-utilisation of institutional capacity and an ineffective public examination system are some of the major weaknesses of the education system of Bangladesh. Any thinking regarding a distance education programme for the country must not only be down-to-earth but productive. Of all the problems facing Bangladesh today, none is so pressing as that of improving the quality of the life of people, the majority of whom live below the poverty line. In view of the realities that exist, it is rather expedient that we take stock of the situation before charting out a strategy to use distance education.

Any strategy for distance education in Bangladesh has to be operationally feasible in the first place. Misplaced and misperceived priorities can harm a developing country because the resources are always scant and there is so much to do. It seems that in Bangladesh distance education should address itself to the following areas in order of priority:

(1) universalisation of primary education and adult literacy,
(2) non-formal education programmes to reach out to the masses and
(3) supporting formal education programmes by:
    (a) school/college broadcasts and
    (b) teacher-training strategies through TV, radio and micro-teaching modules.

UPE AND ADULT LITERACY

The Government is keen to eliminate illiteracy. This is clearly reflected in the following:

> Only 26 per cent of the population is enumerated as literate and three fourths of the population are illiterate. A subsistence economy tends to enforce subsistence knowledge and through it the tradition. In this vicious circle economic development cannot proceed at a desirable pace. The experience of those countries in the Third World which have enjoyed development success (is that they) have also had a high rate of literacy. Though the reverse may not be true, there is no doubt that education is not only a means to knowledge but also moulds people's attitude towards life and work. So while striving for attaining universal primary education before the end of the Third Plan, a substantial reduction in adult illiteracy must be achieved by the end of 2000 A.D. (Planning Commission, 1983).

The Second Five Year Plan (SFYP) emphasises the use of mass media to assist and accelerate the process of development. The Plan identifies UPE and the eradication of illiteracy as the two top most priorities in the education sector. The question is how to use mass media like radio and TV to strengthen the efforts connected with UPE and adult literacy. In order to make the strategy operationally feasible and result-oriented, the following input parameters should be kept in view:

(1) Radio Bangladesh covers the whole country with national transmissions from Dhaka totalling around 19 hours daily. There are also six regional stations transmitting locally originated programmes. Much of the programming is in Bengali, with some English and minority languages, the latter especially from the regional stations.

(2) Television transmission is from Dhaka with some regional relay stations. It was intended that television transmission would cover 90 per cent of the whole country during the period of the SFYP.

(3) The Film Wing of the Film and Publication Department of the Ministry of Information produces films for exhibition at commercial cinemas and in their own 70 mobile cinema units. The Wing has a production unit and a processing and printing laboratory, operating both 16mm and 35mm. The films produced include weekly newsreels and special news, cultural and documentary programmes for the Government. There are cinema halls in most substantial population centres, but the cinema remains largely an urban facility.

(4) School buildings are used for four to five hours a day on working days and are available for full-time use for about 200 days in a year. Furthermore, 400 community schools have been established through Bank assistance all over the country.

It should be noted that there is a connection between universal primary education and the reduction of adult illiteracy. These aspects of the education strategy influence each other. Television can be of immense help in literacy efforts. A programme like "Sesame Street" in the United States is an example of how TV can be used for making children literate. TV is now being used for adult literacy programmes in Yemen, and alphabet training is also given by TV.

NFE PROGRAMMES FOR THE MASSES

A distance education network has to be geared to educating the masses irrespective of whether they are literate or not. It would be a good idea to locate one place in every village and name it the "community centre". Such a centre could be either a primary or a secondary school, depending upon the quality of building and availability of floor space. A *madrasah* could also be used. It is hoped that construction of a special building for the purpose would be avoided.

Each community centre would have a teacher (from either the primary or the secondary school depending upon availability) in charge of operating a TV set and a transistor radio. The community centre would be open to all, and the person in charge would operate the equipment and be responsible for maintenance as far as the maintenance schemes provide (see later). One TV hour best suited to farmers, workers and landless laborers would be designated as the Sonar Bangla Hour. Bangladesh Institute of Distance Education (BIDE) could be responsible for the production of material. Two examples will give an idea of how the whole machinery would operate.

Experience in the Ivory Coast suggests that TV programmes intended to increase farm production result in higher incomes for families. Parents who were reluctant to become literate themselves were very keen to send their children to school. TV programmes should be so designed that adult learners get all the advantages of learning from mass media such as TV or radio.

Project IMPACT (Instructional Management by Parents, Community and Teachers) was implemented in the Philippines to test an approach to primary education that would sharply reduce costs per student without loss of educational quality. Canada's International Development Research Centre funded the project, which was developed by the Centre for Innovation and Technology. USAID's (United States Agency for International Development) evaluation of the project, based on a review of records and interviews with parents, teachers and IMPACT officials, is given below:

> Under the project, 100 or more primary school students, divided into groups of 5–10, were taught by intermediate (grades 4–6) primary school students using programmed teaching modules under the supervision of professional teachers. Parents and skilled workers served as community resource persons, and a local primary or high school graduate provided clerical, administrative and logistic support.
>
> Cost-effectiveness studies and academic performance tests indicate that the project achieved its objective. An added benefit was the greater poise and personal initiative evinced by IMPACT students over their conventional counterparts, possibly as a result of IMPACT's stress on independent study and peer group interaction. Unfortunately, initial project savings were not used to maintain qualitative levels in subsequent years (e.g. by replacing texts and equipment and repairing school buildings), resulting in declining professional support for IMPACT. Parents viewed IMPACT as benefitting the brightest students, but as less successful with average students (USAID, 1982).

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Project IMPACT has a transfer-potential for Bangladesh because it:

(1) is cost-effective,
(2) ensures community involvement and
(3) is likely to succeed because it has been tried out in a Third World country.

A linkage between non-formal educational efforts and the distance education network has to be ensured in order to get the returns in terms of size of audience, community involvement and quality of production. Below is given an outline of the action programme that indicates how the whole machinery would operate.

It is suggested that 12 *Upa-Zillas* be selected from each of the four Divisions and, within each selected *Upa-Zilla* (48), *all* the villages might be provided with a community TV set. It is estimated that each *Upa-Zilla* would have about 150 villages. In order to start the community centres in the villages, the programme would require at least 7,200 (48×150) TV sets. In some cases, more than one TV would be required, depending upon the size of the community.

It is suggested that the task of maintenance would be undertaken at three levels:

(1) a central workshop for major repairs and storage
(2) mobile service units to cope with routine maintenance, checks and breakdowns and
(3) first-aid maintenance, for instance, changing batteries, by the 7,200 teachers in charge of the community centres.

Last but most important, the production of instructional materials would require highly professional manpower, equipped with skills in film production, graphics and direction. The team of professional people would see to it that the Sonar Bangla Hour was very entertaining, educative and thus popular. It would have to catch the attention of people, and so the best skills of good production should be put to use. In order to achieve a very high level of sophistication and quality of production, BIDE should be made to play a very vital role.

Institutional reorganisation of BIDE might be necessary in terms of expansion and reinforcement to ensure the highest possible quality of production, efficient distributive machinery and a built-in feedback mechanism for continual improvement and modification. BIDE might therefore require additional manpower as well as enhanced capability of the existing staff and material resources to prepare for the challenging task.

In the proposal on non-formal education that follows, a detailed note on other non-media aspects of non-formal education is presented.

SUPPORTING FORMAL EDUCATION

It is envisaged that provision of radio and/or TV time on the national network would be relatively cost-effective, as the structures of formal education at the primary, secondary and tertiary levels do exist. TV and radio networks are available throughout the country. BIDE caters for 1,062 secondary schools, about 424,800 students and 10,620 teachers through its regular radio and TV programmes. It also broadcasts a 40-minute radio programme on subject content daily, which is used both by regular students and by out-of-school youth. BIDE has a pivotal role to play as it has a resource base for all the activities connected with educational technology and software production. It is quite gratifying to note that there is 95 per cent coverage by radio and 85 per cent coverage by the TV nerwork. However, there are 148 persons for each licensed radio and 465 persons for each licensed TV set. (Bangladesh Bureau of Statistics, 1984).

Bengali is the major language spoken by one and all, although there are also dialects and minority languages. This is a truly advantageous position, as it allows production of text books and support materials in only one language. It also implies that large-scale production of instructional materials would result in reduction of unit costs.

The Commission on Instructional Technology, in a report to the President and the Congress of the United States, identified several potential benefits of educational technology, as follows. Technology can:

(1) make education more productive
(2) make education more individual
(3) give instruction a more specific base
(4) make instruction more powerful
(5) make learning more immediate and
(6) make access to education more equal.

In order to gain all the benefits listed above, a well-planned distance education strategy should be worked out with the involvement of the following agencies:

(1) Bangladesh Television
(2) Radio Bangladesh
(3) BIDE
(4) Film and Publication department of the Ministry of Information
(5) Bangladesh Broadcasting Academy
(6) The Institute of Graphic Arts

In addition to regular broadcasting sessions for students, BIDE should also develop programmes for teacher training. In a report entitled *Distance Education in Bangladesh* a British Council team suggested the following for distance education in support of primary school teachers (1981):

(1) The recent nationwide programme for the re-orientation of primary teachers should be strengthened and extended through a course prepared by BIDE using distance teaching methods.
(2) This course should be offered to all primary teachers over a period of four years.
(3) A pilot version should be tested with 11,750 teachers, which would then be revised and used with the remaining teachers.
(4) The course should last 16 weeks and use print, radio, television and workshop/tutorials.
(5) National organisations involved in curriculum development and teacher training should be involved in the preparation of the course materials and in the training and provision of tutors.
(6) There should be continuous assessment and an end-of-course examination, with the award of a certificate for successful completion.
(7) Consideration should be given to the granting of an extra increment or other inducements to those teachers who are successful.
(8) There should be pre-course motivational programmes for all teachers.
(9) A Project Co-ordinator should be recruited as soon as possible, followed by the appointment of two subject specialists.
(10) 470 part-time tutors should be assigned and trained for pilot cycle, and this number should be increased to 1,000 for the remaining cycles of the course.

BIDE should use microteaching strategies for the training of teachers at all levels, with or without hardware. ("Microteaching" implies that a small content area is taught for about 3–7 minutes to four to five students. It also implies "simulation" in teaching for development of teaching skills like questioning, stimulus variation, giving illustrations, etc.) The training colleges in countries like India and the UK have used this training strategy with a certain amount of success. It can be made very cost-effective if closed circuit television (CCTV) is not insisted upon. Research has shown that the efficacy of microteaching is not significantly reduced if CCTV is not used and only tape recorders are used. It must be recognised that microteaching can also be resorted to without any hardware whatsoever; at some training colleges in India this has become a regular practice. BIDE should develop expertise in this area of teacher training and produce modules of micro-lessons for training colleges.

CONCLUSION

It is suggested that in addition to the one TV hour suggested for non-formal education to reach out to the masses, TV and radio should also be used for supporting ongoing formal education programmes. It should be noted that in 1983 there were 203,000 black and white receivers and 20,000 colour receivers duly licensed (Bangladesh Bureau of Statistics, 1983:193). The task of reaching out to 15 million households is colossal, and it presents a challenge that deserves to be met squarely.

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FOOTNOTE

The author worked as Education Systems Specialist on a Fact-Finding Mission to Bangladesh appointed by Asian Development Bank, Manila, November 1984.

Distance education and national development: the Zambian case

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INTRODUCTION

Zambia covers 753,000 square kilometres in central southern Africa. Its total population was estimated at 6.73 million in 1985. The rural areas where most people live are characterised by sparse and scattered settlements (Central Statistical Office, 1986).

In pre-independence Zambia there was a serious shortage of educational facilities for the indigenous population at all levels. At independence (1964) only 15 per cent of the men and 3 per cent of the women had more than four years of primary school education. There were only 1,200 indigenous Zambians with full secondary certificates and just over 100 university graduates (Mwanakatwe, 1974; Alexander, 1975). This meant a serious shortage of manpower.

At independence two thirds of adults over 21 years of age, out of a total population of 3.5 million, were illiterate (Mwanakatwe, 1974; Kashoki, 1978). Before independence agriculture was seriously neglected despite its enormous potential (United National Independence Party, 1973; Ollawa, 1977). Agriculture extension services were restricted to non-Africans (Sanyal et al, 1976).

At independence the new Government of the United National Independence Party (UNIP) embarked on development programmes aimed at overcoming these problems. It relied on the education system as a major instrument of change.

This article describes the extent and limitations of the formal school system and face-to-face continuing education and shows how distance education has been used to address deficiencies and contribute to socio-economic development.

DEVELOPMENT POLICIES

Zambia's ultimate goal of national development is economic and social justice between rural and urban populations. (See Ollawa, 1977.) Since independence therefore the Government's main economic and social goals have included:

(a) narrowing the gap between urban and rural standards of living by increasing the productivity of small-scale agriculture, and
(b) raising the general level of education to develop a wide range of technical, administrative and managerial skills to lessen the dependence on expatriate expertise.

(Sanyal et al, 1976:31)

These policies have put the emphasis on rural development and on mass participation in their formulation and implementation. However, the people can only participate effectively if they have a certain amount of education.

EDUCATION AND DEVELOPMENT

There is no consensus over the causal relationship between education and development (see for example Blaug, 1970). However, Tilak (1986) has noted that education is being recognised increasingly as an important commodity in itself and a source of economic growth both at individual and macro levels. Education is a great equalizer and increases the quality of labour input leading to higher productivity (Tilak, 1986).

In Zambia education is regarded as vital for economic development and political independence. (Alexander, 1975.) This is reflected in the ruling Party's policy on education:

> Education is the basis of national development... It is crucial to the development of the individual and is an invaluable social investment which guarantees the expansion of society's productive capacity... it is also an essential precondition for a viable democratic system.
>
> (United National Independence Party, 1973:51)

Successful industrial development requires Zambians with administrative and technical skills and the Government's ultimate aim is complete Zambianization in the economic and social sectors.

According to Daniel et al (1982:15) "the contribution of education to national development could conveniently be measured by the degree to which a nation's social, cultural, and economic aspirations are served by its educational system." We therefore examine the performance of the Zambian education system in its two main forms; formal and continuing education.

THE FORMAL SCHOOL SYSTEM

At independence the new Government embarked on a massive and rapid expansion of the formal education system to increase the output of educated manpower. Expansion was accompanied by the abolition of tuition and boarding fees.

As a result enrolment in primary, secondary and technical education increased by 43%, 69% and 46% respectively during the 1970s. Teacher Training Colleges' enrolment rose by 84% while enrolment in the University of Zambia rose by 119%. (Central Statistical Office, 1986.)

Despite this impressive record in 1986 "only half of all the seven year old children were accommodated in Grade 1". (National Commission for Development Planning, 1987:297–298). In addition large numbers of children, particularly in rural areas, leave school after lower primary (Grade 4) because of a shortage of upper primary school places.

Only about 20% of primary school leavers are able to enter junior secondary and 50% of junior secondary graduates are able to continue to upper secondary education (Central Statistical Office 1986). Certainly many drop-outs have talents which they could develop with further education. There are also problems of teacher shortage, and overenrolment which gives excessively large classes (National Commissions for Development Planning, 1987).

With an average annual population growth of 3.6%, Zambia's school age population is estimated to increase by 629,000 between 1985 and 1995. This will put pressure on educational facilities at a time when the country's economic problems have reduced Government expenditure on education and training in real terms. (National Commission for Development Planning, 1987.)

CONTINUING EDUCATION

Efforts were made from the time of independence to meet the educational needs of out-of-school adults. About 25 government, private and voluntary organizations have been actively involved in continuing education in many areas, ranging from basic literacy skills to education leading to certification (see Ministry of Education, 1977).

Despite tremendous achievements, the country's needs in continuing education are "so vast and resources so inadequate that the existing programmes barely scratch the surface". (Ministry of Education, 1977:55.) Arguably, the problem has been compounded by the dominance of face-to-face methods in most of the continuing education programmes.

DISTANCE EDUCATION

The problems of the formal school system and the limitations of continuing education justify the use of distance teaching methods. There are a number of distance programmes.

(a) DISTANCE TEACHING FOR FORMAL SCHOOL EQUIVALENCY

Established in 1964 the National Correspondence College of the Ministry of General Education and Culture provides secondary education by correspondence to adults and also to teenage primary school leavers in Supervised Study Groups. This scheme enables many people, who would otherwise miss the chance completely, to study for junior secondary and G.C.E."O" level certificates.

The College's adult student population rose from 129 in 1964 to 32,000 in 1980 (see Ministry of General Education and Culture 1982). In 1980 the Supervised Study Group Enrolment totalled 10,000 (Central Statistical Office, 1986).

About 25% of adult students live in rural areas (National Correspondence College, 1980). Thus correspondence education is trying to deal with the problem of numbers as well as of the discrimination against the rural population which oral methods tend to encourage when the institutions offering face-to-face continuing education are concentrated in urban areas.

Since 1967 the University of Zambia has offered some courses to external students. In 1986 courses leading to the Bachelor of Arts; Bachelor of Arts with Education; and the Diploma in Adult Education were offered by correspondence with a total enrolment of 631 students (Department of Correspondence Studies, 1987).

Correspondence study also enables some internal students who fail to progress on a full-time basis to continue their studies. Given the limited university facilities the scheme is significant in increasing the overall enrolment of the University of Zambia.

(b) DISTANCE TEACHING FOR SCHOOL SUPPORT

The Educational Broadcasting Services (comprising Educational Radio, Television and Audio-Visual Aids Services) were established in the early 1960s to help improve the quality of instruction in schools. The specific objectives are to extend new curricula; enlarge learning experiences; and provide inexperienced and undermotivated teachers with new skills and approaches. The Educational Broadcasting Services thus help to spread scarce specialist teaching to all schools. (Ministry of Education, 1977.)

The Educational Radio Service transmits programmes to over 2,000 primary schools, 120 secondary schools and 14 teacher training colleges. Radio lessons are also broadcast to the students of the National Correspondence College and those in Adult Education Centres (Ministry of General Education, 1982).

Radio lessons are dubbed on cassettes by the Audio-Visual Service and lent to schools, especially those that find it difficult to schedule the radio broadcasts. The Audio-Visual Aids Service also lends other teaching aids such as film strips and distributes and repairs audio-visual equipment in schools.

(c) THE MEDIA AND NON-FORMAL EDUCATION

In addition to its residential courses Zambia's Co-operative College provides education to rural adults through distance teaching media. Using radio, accompanied by handbooks and study guides, the college launched a National Study Group Programme in 1983. Its main aim is to improve "the daily life of the population in the rural areas, through active participation in the Co-operative movement". (Co-operative College, 1985:4)

In 1983 about 100 district organizers and 2,000 group leaders were trained. There were 40,000 participants in the study groups. The Co-operative College also provides correspondence courses for managers and book-keeping staff of co-operatives.

Radio Farm Forums were introduced in Zambia in 1967 with the aim of: – (i) educating small-scale peasant or subsistence farmers in modern methods of agriculture; and (ii) taking mass education to places which agricultural extension workers cannot easily reach (Lubasi, 1982).

In 1979 there were 722 Radio Farm Forums in the country. The Rural Information Services of the Ministry of Agriculture and Water Development, which is responsible for Radio Farm broadcasts also transmits radio programmes for commercial and emergent farmers (Lubasi, 1982).

Zambia Broadcasting Services allocate a considerable amount of radio time for various non-formal education programmes in adult literacy, health education, political education, nutrition, workers' education and science education. These are produced by various ministries and institutions.

Zambia Information Services publish and distribute six newspapers in local languages as a way of disseminating information; education is thereby shared equally with the people in the rural areas of the country. The Department also distributes booklets on various subjects and has in the past run film shows of an educational nature in the rural areas.

CONCLUSION

Education by conventional means has serious limitations which distance teaching has been used to overcome.

One problem of media use in Zambia is that many distance education programmes have either been inadequately evaluated or not evaluated at all. This raises the question of their effectiveness and relevance. Also there does not seem to be any effective system of co-ordinating the various distance teaching programmes (especially non formal ones) so that various media and programmes can support each other (see for example Alexander, 1975).

Nevertheless distance education offers an immense opportunity for the Zambian Government to meet the vast educational needs of its people thereby facilitating economic, political and social development.

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Distance education in the education of teachers

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MODELS AND METHODS

The four colleges of education for teachers in Northern Norway have since 1979 developed and implemented several special approaches to the education of teachers. One is known as "decentralized education for teachers". The development of this alternative way of educating teachers arose from the serious lack of teachers in Northern Norway for most of the post-war years. "Decentralized education of teachers" was one of the many steps which our National Assembly (Stortinget) introduced in 1979 to improve education in Northern Norway. The expression "decentralized education for teachers" means that students could mainly live, work and study in their own district during most of their period of study. Theory courses, however, took place at central seminars, either at a college of education or at a convenient central location.

The most obvious differences between decentralized education of teachers and conventional methods are:

- Study arrangements
- Methods of distance education and improvement in the theoretical education of future teachers.
- Continuous supervision.

The aim of the decentralized education of teachers was to select local students from the various districts in Northern Norway who liked living in this special part of our country so as to stabilize the classroom situation for schools having difficulty employing teachers. Students had to demonstrate strong links to their local communities.

DEVELOPMENT OF STRUCTURE AND ORGANISATION

"Decentralized education of teachers" is one of the most comprehensive and radical attempts to create a new model for teacher education in Norway. Students were employed at a primary school during their studies. At the same time, an experienced teacher was engaged for their district. Theoretical courses, induction lectures, class projects, social activities, etc., were organized during concentrated 2-week meetings at e.g. Bodø College of Education for Teachers. During the two year programme there were four such meetings annually, with weekend meetings between each main meeting and guidance for the students in local groups between meetings. The structure might vary a little from college to college; however, those in Alta, Tromsø and Nesna followed this pattern. The three years' of study was considered equivalent to the regular two-year study programme.

The aim of this model is primarily to allow students to undertake higher education with a more reasonable period of absence from their homes and their work at school. It is also an alternative for those who have no opportunity to enter full time study. It aims to secure a well qualified reserve of teachers for the primary schools. The programme attracted mainly women who had established a family before studying for a profession.

Decentralized education of teachers was organized by the colleges of education but was in reality a cooperative project between the colleges and the students' local primary schools/communities. It differed from a regular programme at an institution, in the practical work at the schools, flexibility, and the selection of students with links to the local community. It involved close cooperation between the college lecturers, the school directors of the communities, the principals and the teaching supervisors at the schools where the students had their practice. Contact between these parties was through information letters, negotiations and meetings at school, telephone, conferences and courses.

DISTANCE EDUCATION

A programme where the distance between the mother institution and the students is usually relatively large presupposes new methods and routines of work. The relevant methods of distance education were applied to this specific situation. The syllabus of the college must be followed, but personal contact between the teacher and the student is limited. Communication between teacher and the student is based on study letters, printed materials, compendiums, assignments, telephone, radio, video, film, tape records, visuals etc. Decentralized education of teachers used many new methods summarized as follows:

- Written study guide. These were sent to students frequently. They might contain general advice on the coursework, commentaries on various books, articles or topics and study hints.
- Solving practical/theoretical problems. Assignments were framed so as to connect the theoretical and the practical sides of the programme. Thorough practice in solving problems facilitates the transfer of material from theory into practice and vice versa. The structure of the programme gave ample opportunity for relatively comprehensive work of this type during the three years of distance education.
- Tasks in topics/projects across subjects. Students were working with only one of the subjects Norwegian, mathematics and religious knowledge at the same time as they were taking education courses. This made it possible for them to deal with a lot of common subjects or problems in the light of a professional, pedagogical and practical evaluation. The students were teaching the same subjects in the primary school as they were studying at the college. This was an important contribution to the relevance of the experience and the transfer of theoretical knowledge to practical work.
- Guidance by the college lecturers during their visits to the local primary schools.
  The lecturers' guidance covered both the courses and the practical work of the students.
- Daily guidance by the teaching supervisor. The responsibility of the teaching supervisor was the practical part of the profession. It included not only the work of the student in his/her own class, but all parts of the teacher's role: e.g. collegiate matters, working with the families of the pupils, instructional development, etc.
- Telephone conferences for students organized in local groups. Telephone conferences were used for solving problems given by the college lecturers. These teleconferences were highly rated.
- Audio tapes for problem solving. Problem solving at teleconferences was recorded and sent to students for possible use in their own study.
- Individual telephone supervision. This form of supervision was only given at the student's request. Use varied, in part because of the busy travel schedule of the lecturers.

RESULTS

The reports on decentralized education of teachers show that:

- The students achieved a professional standard equivalent to that of "ordinary" students.
- During the whole programme students were dealing with practical problems, this enabling them to do a better practical job as a teacher than "ordinary" students. School directors, headmasters and teaching supervisors all agreed on this point.
- The students were working on projects and undertaking tasks which are quite a new contribution to the education of teachers, because of their continuous practice in the primary school.
- It is 5 years since the first classes graduated. So the teacher population is stable in the local school districts. Only a few teachers have left the district. This proves that organized recruiting is creating stability and continuity in schools, as was assumed in investigations on teaching in Northern Norway (NOU 1978:50).
- The test of decentralized education of teachers also proved that an arrangement of study based on various subjects, organized as a project with the students working on e.g. mathematics, pedagogics and practice at the same time, makes the objectives of the whole programme clearer. Students experienced their education as very relevant and meaningful.

Today there is a crisis in teacher education not only in the rural districts of Norway, but throughout the whole country. Distance education for teachers may be a possible answer. Its use to deal with a crisis, as well as its relevance to local district policy and to the recruitment of women has shown its value. The colleges of education have shown no great interest in learning from the positive experiences of the decentralized education. They prefer business as usual.

However, the decentralized education of teachers with varied arrangements of distance education with regard to television, data systems etc, will probably be further developed.

Perhaps in a few years this will be how higher education is conducted in the local districts of Norway.

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Telecommunication and speech pathology

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INTRODUCTION

In Australia audio teleconferencing, using the regular telephone network, is reducing communication costs, improving service to external learners and in speech therapy, helping clients with communication disorders who are isolated from service providers.

In Victoria, for example, teleconferencing, using the DUCT system (Diverse Use of Communication Technology), is being extensively used by the State Education Department to overcome the shortage of teachers in rural schools, to address the problem of reduced subject options and to increase the retention rates of students in their final two years in high school.

The flexibility and low capital and operating costs of audio conferencing makes this method of reaching rural schools and individual students of special interest to serving institutions and professions.

This paper describes the development of the use of telecommunication technology to deliver speech therapy programs to children in Australia who are suffering from communication disorders and who are isolated from service providers.

BACKGROUND

Distance and Disability. The use of the DUCT system to provide service to children with communication disorders.

In 1981, Frontier Services, a Commission of the Uniting Church in Australia, at a conference of the Isolated Childrens Parents Association, Australia, undertook a major research project. The project, subsequently named, "Distance and Disability" was to be a contribution by these two bodies to "The International Year of Disabled Persons".

The objective of the survey was to seek to establish the prevalence of children with disabilities in isolated areas, including numbers and location, how the disabilities are affected by distance from service provision, and in what ways the needs of parents and children could be met.

A total of 1,220 parents responded to the survey from target areas in the following states; Northern Territory, Queensland, South Australia, New South Wales and Tasmania. Western Australia was not included as there was a survey of that state already underway by the National Centre for Research on Rural Education.

The definition of disability used was that adopted by the World Health Organization, Geneva.

In the context of health experience, a disability is any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being.

This definition was used in the widest possible context to include many conditions not normally considered by parents or the community as disabilities, including learning difficulties, emotional and behavioural problems.

Children with mild disabilities were not excluded. Such children may be in need of such services, perhaps of a different kind, as frequently and regularly as children with severe problems.

A severe handicap can be created for a child with a "mild" or "minor" disability if access to the required services is restricted or prohibited by isolation from service providers. For example, in speech therapy, such disabilities as speech and learning may be neglected or inadequately attended to since they are not life-threatening nor necessarily make a child unwell. However, such untreated disabilities can cause or contribute to other disabilities, e.g. the child with a learning disability may lose self esteem and show behaviour problems.

Moreover, if parents decide to seek the best available for their child, journeys to major towns or capital cities can be disruptive, expensive and exhausting, irrespective of the severity of the problem. If the family moves to be closer to service providers, there is also the loss to the employer for whom people with skill and experience are in short supply (if indeed, in such isolated areas, they are available at all). This economic factor alone could justify provision of services by telecommunication systems.

The role that parents play in isolated areas is crucial. They are the primary providers of care, the primary managers of their child's disability and therefore the consumers of services planned to meet their children's needs. Whatever help was envisaged this role of the parent as care-giver had to be central and technology had to enhance, not diminish, contact with service providers.

RESULTS OF THE SURVEY

1. A total of 1,220 parents responded by questionnaire. Statistical analysis and extrapolation showed that there were approximately *5,250 children with disabilities* within the target area (a figure supported by other sources).
2. *Over 50% per cent of the children had communication difficulties,* nearly half in the moderate to severe category, i.e. can only make sounds or can only understand or be interpreted by family members, or can only say simple words. This same proportion is found throughout all age groups although they are a slightly higher in the 5–9 years age group.
3. *Overall 59% of children have problems with learning* and most are in the moderate to severe category, having problems in all areas of learning or with five out of six specific subjects.
4. About half of the children were reported as having some degree of limitations in *behavioural skills.* About 2 in 5 have severe limitations, i.e. they demonstrate aggressive and destructive behaviour. About the same proportions have problems classified as moderate, i.e. they demonstrate temper tantrums, attention seeking or withdrawn behaviour, or very changeable levels in mood.

Caring for these children must have a tremendous impact on the lives of their families, for behavioural and learning difficulties should be seen in the social context of the child's life and environment. To leave the situation at that point (with all the many fine-sounding recommendations) serves only to heighten frustration and further irritate the respondents.

In view of what had been discovered overseas, a decision was made to explore the feasibility of using terrestrial and satellite technology to deliver a range of services to children with communication disorders isolated from service providers. A major guiding principle was that the technology used enhance rather than diminish contact or interaction between the service provider and the client. The survey revealed that the highest need of the parents was communication with other parents in similar circumstances and with various advisors.

PROFESSIONAL MOBILITY

An interesting sub-finding of the survey was the problem of *Professional mobility,* i.e. the frequent turnover of professional staff working with service agencies. Doctors, nurses, teachers and others rarely stay in small outback communities for more than one or two years. This problem is particularly acute in Queensland where some vacancies for speech pathologists, for example, can take up to two years to fill and then be vacant again for the same period of time. The result is that outback people come to have a low level of expectation of the delivery of basic support services. More specialised services do not exist.

PRELIMINARY INVESTIGATION

In February 1985, a preliminary investigation was undertaken of the types of telecommunication facilities available for speech therapy programs.

This investigation covered.

A. The application of telecommunication systems to provide speech therapy services to children with communication disorders;

B. Ways of providing assistance to parents in isolated regions who had children suffering from communication difficulties;

C. Ways of improving the provision of continuing education services to speech pathologists working in isolated regions.

The aim was to discover whether telecommunication systems can provide isolated families or professionals with *increased access* to information, and/or a broad range of services, which could help to bring about positive changes, (effective), in communicatively impaired individuals, at moderate or low financial and time/energy costs.

Developments in three States.

SOUTH AUSTRALIA

Speech pathologists in the South Australian Education Department are based in regional centres in the city and country and travel from their base to the schools in their area. In the city, where schools are in close proximity, little time is wasted in travelling. However, in country areas, speech pathologists can travel up to six hours to reach the schools and the children they service. Consequently, visits to distant schools are less frequent, and time spent on the road is a costly and inefficient use of the time of the therapist. In an attempt to rectify this situation, trials were undertaken with the DUCT system which the South Australian Education Department was using for cluster and HUB Teaching.

A trial was conducted in a local school with five children who had speech and/or language problems. The children and their problems were unknown to the therapist situated at a distance from the school. A speech pathologist sat in the room with the children. The Fisher Logeman articulation test and the Renfrew action Picture Test were used to obtain samples of speech and language. The errors heard via the DUCT were compared with the errors the speech pathologist heard in the room with the children. It was found that all errors, except "Q" for "S" could be identified by the distant therapist.

Seven further trials involving on-going therapy were initiated with a school 40 kilometers from Adelaide. The school was chosen for distance and also accessibility in case of difficulties. The therapist who had already visited the school to ascertain the needs of the children was at one end of the system and a teachers aide was in the school classroom. The seven trials were scheduled at a regular time slot each week for one hour. Each child was on the DUCT system for 15 to 20 minutes (approximately) and the same time was spent after each session for discussions between the therapist and the aide. Follow-up lessons were agreed and material sent using both mail and facsimile transmission. The teachers aide functioned as the "eye" if the therapist was unsure what the child had said, or if there was a long pause. The assessment revealed that all the children had progressed. The child with a severe articulation disorder had made the most progress. Since these first trials in 1985 other speech pathologists have used the DUCT system with satisfactory results.

QUEENSLAND

Speech therapy at a distance has followed a different path in Queensland. Because of the vast distances, the excessive cost of satellite transmission, the telecommunication distortion problems due to extreme weather conditions, therapy based on terrestrial networks using, for example, the DUCT system is viable only for short distances radiating out from metropolitan and regional city centres. Instead, the Division of Guidance and Special Education Support Services of the Queensland Education Department has created a number of kits which consists of five VHS video tapes (approximately 30 min each), and print material relevant to each video program. These videos have been professionally produced and are of excellent quality. The "Exchange Series" has been developed primarily for parents, teachers and people interested in children's communication. The rationale is that such information show how to maximise communication development in the home and classroom. Knowledge of normal communication development is helpful in understanding disorders. The exchange series, created and developed by speech therapists, psychologists, parents and support staff, can also reach distant isolated regions by the commercial and ABC networks on satellite.

The objectives are as follows:

THERAPEUTIC OBJECTIVES

1. To provide parents, teachers and others with basic knowledge of communication development, disorders, prevention strategies and remedial techniques.
2. To provide parents, teachers and others with the skills and knowledge to collect and record communication behaviours for analysis by the speech therapist.
3. To provide parents, teachers and others with knowledge of different types of intervention programs available and to assist them to become facilitators for the implementation of these programs.
4. To provide families, schools and others with a consultative service in relation to communicative needs, assessment and intervention techniques.
5. To provide continuing education activities for speech therapists.

TECHNOLOGICAL OBJECTIVES

1. To accrue information and expertise in the application of satellite communications to distance speech therapy service delivery.
2. To explore the possibilities of a mix of communication technologies for service delivery particularly considering the use of teleconferencing, computers and video taping.
3. To consider support options available — Australia Post, facsimile, computers etc.
4. To evaluate the effectiveness of the use of the satellite for the delivery of speech therapy services.

These aims are addressed by the Exchange Series pre-taped video programs which are designed to help parents, teachers etc., gain knowledge of patterns of normal communication against which speech/language patterns of children can be assessed. Depending on feedback and the identification of specific needs, interventionist strategies can be developed.

THE EXCHANGE SERIES

The "Series One" consists of five programs which provide a basic understanding of children's normal communication development. The program titles are:

1. What is communication?
2. The baby learns to be a communicator
3. Communication skills develop as the child discovers more of the world.
4. Communication skills are used in the wider world

5. Individual differences in communication.

The Exchanges Manual was written to help viewers benefit most from the programs. There are five sections in the manual per program:

a) Overview of content. This section contains information from the video with expansion of specific points, it is intended to be read before viewing and after participating in the course.
b) New terms are explained in the overview section.
c) Issues. These are specific topics for discussion. There is not necessarily a correct answer but they stimulate thought on program topics.
d) Activities. These are divided into activities for home or classroom as relevant. A better understanding of the will be gained if viewers can relate ideas in the programs to their own experiences. (However the activities are not homework!). The activities will give viewers some insight into their own children's communication development.
e) Readings. These are suggestions for further reading on the ideas covered in the programs. The Speech Therapist in charge of the region can provide the texts.

VICTORIA

Developments in speech therapy at a distance has occurred somewhat later in Victoria than in Soutch Australia or Queensland. The delay has been due mainly to the erroneous belief that isolation in Victoria does not exist. This may be true regarding distance; it is not true regarding isolation from service providers which is acute in the northern regions of this state. As a result of this delayed entry Victoria, has been able to benefit from the pioneering work in South Australia and Queensland and to take advantage of the trials conducted by the Victorian Education Department in the "Retention program for years 11 and 12 in rural schools".

The Victorian State Labour Government is committed to a policy of increasing the retention rates of students in their final two years at high school. This policy has an unstated aim of delaying student entry into a somewhat depressed labour market and increasing the numbers of students in tertiary education (there is national concern about the small percentage of students undertaking tertiary education compared to other countries).

The number of students at Australian secondary schools is declining. This is due to dropping birth rates, and the end of the post-world war II baby boom. With the decline in numbers there is also a decline in teachers and a consequent reduction in subject offerings. This problem is paticularly acute for rural areas and to meet this difficulty the Victorian Education Department has been experimenting with the use of technology to encourage cluster network sharing of resources in country schools. Technology has been defined broadly as the "strategies, plans, procedures, software/courseware and equipment necessary to enable schools to link together to share scarce resources to improve retention (Memorandum to Schools, Feb. 1987 — see reference).

The objectives are as follows:

1. To provide more subject choice in small country post-primary schools at levels 11 & 12 to encourage students to remain at school.
2. To use computer data bases of information to develop curriculum.
3. To explore the feasibility of using technology to deliver student services such as speech therapy.
4. To use technology for teacher in-service education programs.
5. To provide in-service education in the management of distance education networks for school managements and communities.
6. To broader education of disadvantaged groups in rural locations through use of technology.

Object 3 was included as a result of the work of this author. Consequently, speech therapy trials are being planned in 1987–88 for the Mallee track and East Gippsland where the experience from South Australia and Queensland will be applied.

To encourage a sharing of information and support for staff working in the field who use, or wish to use, teleconferencing and related technologies, a regular teleconferencing session linking staff across Australia now takes place. These sessions have proved to be of great value to the participants who, in turn, share this aggregated information with fellow professionals working *within* their State.

In summary a great deal of unique work is going on in Australia in the field of speech therapy for children isolated from service providers. While conclusions must be tentative, a few points can be made.

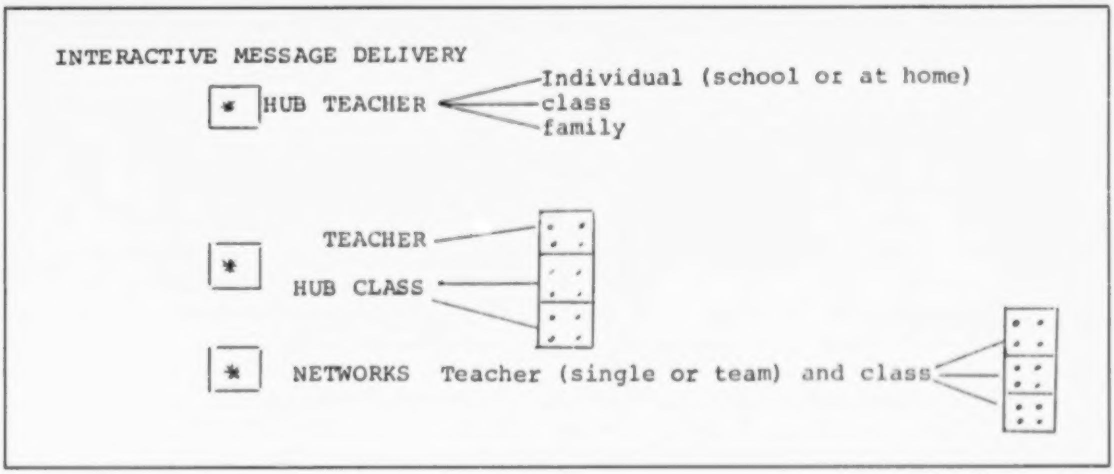
Those who wish to use of technology to counter isolation should be aware of the following social factors.

A As staff working in isolated regions are under constant demand, extreme care needs to be taken to ensure that they are part of the process of decision making and able to see how what is proposed lightens rather than adds to an already heavy workload.

B People working in remote areas have a genuine fear of being colonised by the major centres.

C Those who work in remote areas tend to be independent individuals who want to maintain their autonomy. A link in a network threatens that autonomy and independence.

D The structure and status of isolated communities makes for resistance to outsiders whom they perceive to be intruders.


INTERACTIVE MESSAGE DELIVERY
HUB TEACHER
Individual (school or at home)
class
family
TEACHER
HUB CLASS
NETWORKS
Teacher (single or team) and class

E A network linkage calls for a change in the existing order of procedures and work patterns; this may also bring about a negative reaction. Attention must be paid to the comfort factor of the user in relation to his/her work as well as to the technology being used.

These social issues must be given as much attention as the technical factors. There are already examples of resources not being used, or being under-used, because the time/cost, comfort factors were not perceived to be sufficient in the trade off between local autonomy and the link with a major centre. Staff turnover (normally high) requires a constant ongoing process of education and nurture.

Finally, the following programs are being proposed and pursued in the field of speech therapy in Australia:

1. Information based programs aimed at prevention, assessment, diagnosis and/or remediation of communication impairments.
2. Assisted assessment/diagnosis via parents or para-professionals.
3. Consulting which could lead to changes in behaviour-intervention.
4. Intervention via appropriate training, feedback and monitoring of para-professionals (parents, teachers, etc.) who could assist in direct treatment.
5. Direct treatment by a qualified speech-language pathologist.
6. Client management discussions with parents and professionals, e.g., teachers.
7. Consulting options with professionals from other disciplines or highly specialized "experts" (e.g. speech pathologist).
8. Continuing education and/or tertiary (undergraduate or postgraduate) education opportunities (particularly relevant for professionals working, in remote areas).
9. Formation and participation in support groups by members of the communicatively impaired individual's family (parents/spouse, siblings/ etc.).
10. Formation and participation in support groups by the communicatively impaired.
11. Formation and participation in support groups by isolated professionals.

Clearly, the types of services offered can include anything that the creative individual can imagine. Services for individuals of any age, range, severity level, or type of problem, could benefit in some way from a service offered via a telecommunication system.

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A fuller bibliography will be available at the conference.

Increasing faculty involvement in distance teaching

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The literature on distance teaching documents tremendous growth in distance education programs (e.g., Dirr. & Katz, 1981; Keegan, 1982; Perraton, 1982; Rumble & Harry, 1982; Lewis, 1983; CPB, 1986). There also is evidence of ongoing growth in the adult student cohort participating in distance education (Frankel & Gerald, 1982; Waniewicz, 1982). To meet the growing demand for academic coursework offered at a distance from traditional university campuses, increasing numbers of faculty members will be required to teach at a distance. Yet the literature of distance instruction is largely a chronicle of faculty resistance to teaching via instructional technology (e.g., Carnegie Commission on Higher Education, 1972; Gaff, 1975; Dirr & Katz, 1981; Lewis, 1983). It is this contra-indication in the literature — increasing use of and need for distance teachers yet resistance to telecommunications teaching by current instructors — that prompted this study.

Why do instructors resist distance teaching? What has motivated those who are participating to try it? How can we increase faculty involvement in distance teaching? The answers to these questions are important to the growing numbers of distance education administrators responsible for engaging talented faculty in the art and practice of distance instruction. The literature to date has provided no firm answers to these questions. It has, however, yielded some descriptive information on the factors that affect faculty attitudes towards distance teaching. In this study the descriptive elements were lifted from the literature, classified into six categories, and then reformulated into items on a questionnaire. The questionnaire was administered to a group of faculty at Iowa State University (ISU) — a traditional American campus-based institution with a small but growing distance teaching program. The purpose of the study was to ascertain which factors carry the most weight in an instructor's decision to distance teach or to not. A summary of the factors appears in Table 1.

Table 1. Factors influencing faculty attitudes towards distance teaching

Category	Factors Culled from the Literature
Awareness of distance teaching	How aware are faculty members of distance teaching? Of their institution's involvement in it? Is awareness a precursor of involvement? (Gaff, 1975; Lewis, 1983).
The use of technology for instruction	Does instructional technology inform, or merely entertain? (Lewis, 1983). How appropriate is distance instruction for particular subject matter? (Gaff, 1975; Benning, 1985). Is technology too impersonal? Does it divert resources that could be better used for other purposes? (Lewis, 1983) Does instructional technology have the potential to solve some heretofore insoluble educational problems? (Harris, 1975; Potter, 1981; Lewis, 1983; Benning, 1985)
Logistics	How problematic is equipment failure? (Partin & Atkins, 1984; CPB, 1986a) How about the extra time involved in planning and preparing for distance teaching? (Benning, 1985; CPB, 1986a) How problematic are scheduling and exam arrangements? (Sachs, 1983; Benning, 1985) How important is not having to commute to off-campus sites or the flexibility gained by one-on-one telephone conservations with students? (Benning, 1985)
Quality in distance teaching	How adequate are pre-produced telecourse materials for university instruction? (CPB, 1986a) Does distance instruction promote learner passivity or require better study skills? (Benning, 1985; CPB, 1986a) How does course

	quality compare with campus-based coursework? (Dirr & Katz, 1981; Benning, 1985) Do distance teaching technologies provide additional resources for students that traditional classrooms cannot? (Benning, 1975; CPB, 1986a) Do students learn as well through distance teaching? (e.g., Heinich, 1983) Do instructor listening and communications skills improve through distance teaching? (Morishima et al., 1968; Benning, 1985)
Institutional support	Do promotion and tenure practices support participation in distance teaching? (Gaff, 1975; Harris, 1975; Dirr & Katz, 1981; Potter, 1981; Heinich, 1983; CPB, 1986a) Does the pay received for distance teaching support faculty involvement in it? (Harris, 1975; CPB, 1986a) Are adequate staff services provided for distance instructors? (Gaff, 1975; Field, 1979; Sachs, 1983; Benning, 1985; CPB, 1986a)
Control over the teaching-learning process	Does not being able to see students reduce an instructor's control over the class? (Potter, 1981; Partin & Atkins, 1984; Benning, 1985) Do pre-produced telecourse materials lessen an instructor's control? (CPB, 1986a) Does working as part of an instructional team or adapting teaching techniques lessen instructor control? (Field, 1979; Heinich, 1983) Is distance teaching, ultimately, a threat to faculty jobs? (Field, 1979; Lewis, 1983; CPB, 1986a)

METHODOLOGY

The population studied consisted of 139 ISU faculty members, 76% of whom returned usable questionnaires. Instructors who had taught at a distance via videotape, audioconferencing, satellite, or through the use of pre-produced telecourses made up half the sample. The other half was not experienced in distance instruction.

Pearson correlation coefficients and Cronbach alpha calculations identified validity and reliability for the instrument. The logistics category was not used in some statistical analyses due to its low reliability. A comparison of demographic variables (gender, tenure status, annual salary, professorial rank, years at ISU) showed the inexperienced and experienced halves of the sample to be essentially similar.

Faculty members rated the importance of each distance teaching factor on a 1 to 5 continuous scale, where 5 indicated a positive attitude towards distance instruction and 1 indicated a negative attitude. These ratings were compared to the instructors' own indications of their willingness or unwillingness to teach at a distance. The instructors were also invited to add written comments on the questionnaire. Stepwise multiple regression, t-tests, cross-tabulations and frequencies were used to analyze the data.

RESULTS

Multiple regression analyses identified the issue of instructor control over the teaching-learning process as the single greatest predictor of willingness to teach at a distance. The more faculty perceived distance teaching as lessening their control over the course and the instruction, the less willing they were to try it. For faculty experienced in distance teaching, control was the dominant influence, while the use of technology for instruction emerged as a secondary influence (see Table 2). For inexperienced faculty, control over the teaching-learning process was the sole major determinant of their willingness to try distance teaching (Table 3). None of the other categories — level of awareness of distance teaching, quality issues, or institutional support — significantly affected willingness to teach at a distance.

Table 2. Stepwise regression effects of distance teaching variables on willingness to engage in distance teaching: experienced faculty

Independent variable	Cumulative R square	F-value	Signif F	Variable's coefficient (B)
Control over the teaching-learning process	.359	26,98	.00	.110
Use of technology for instruction	.434	18.00	.00	.083

Noticeably absent in item-by-item regression analysis was any significant correlation between an instructor's willingness to teach at a distance, and the response to the statement "Students learn as well through distance teaching as they do in a traditional classroom". This particular item on the questionnaire focused on teaching *output* — i.e., the results of the instruction. Respondents in this study indicated their willingness to teach was affected by questions focusing on *input* — i.e., the provision of

Table 3. Stepwise regression effects of distance teaching variables on willingness to engage in distance teaching: inexperienced faculty

Independent Variable	Cumulative R square	F-value	Signif F	Variable's coefficient (B)
Control over the teaching-learning process	.389	8.91	.01	.145

Table 4. T-test comparison of perceptions regarding institutional administrative support between faculty willing to teach at a distance and faculty not willing to teach at a distance.

				pooled variance		
Group	n	Mean	F-value	t-value	2-tail prob.	df
Group 1	64	2.792	1.63[a]	0.52	0.601	86
Group 2	24	2.704				

[a] $p < .129$

resources for students, adapting teaching techniques, etc. The results indicate that faculty members' opinions on how well students learn as a result of distance instruction (the output side of the teaching-learning process) do not significantly affect their decision to teach at a distance or not. What *does* affect that decision is the input side of the teaching-learning process: How much control they think they have over the planning and delivery of a course.

The emphasis on input was further supported by the themes suggested in the cross-tabulations on distance-teaching-experienced faculty. Although the data available for cross-tabulations were insufficient to draw definite conclusions, preliminary results indicate that willingness to teach at a distance may be partly a function of the distance teaching mode employed. Of the four telecommunications modes surveyed, telecourse instructors were the least positive about continuing to teach at a distance. Telecourses represent the only mode where the coursework is pre-produced by "outsiders"; the other three (satellite, videotape, audioconferencing) involve instructor-created courses. Telecourse instructors also felt they had less control over their distance learning courses than did videotape, satellite or audioconferencing instructors; and they, along with the satellite instructors, were less positive about the quality of their distance courses.

Faculty opinions on the amount of institutional support given by Iowa State University for distance teaching were negative. Several comments written on the questionnaire said distance teaching did not help applications for promotion and tenure. Also, experienced faculty (and the overall total sample) gave administrative support the second lowest mean of all the categories. T-test results showed no significant differences in the way willing and unwilling faculty perceived institutional support for distance instruction (see Table 4).

CONCLUSIONS

The results indicate that full-time faculty at a major research institution do not choose to participate in distance teaching because they see strong administrative support for distance instruction. Faculty who teach via telecommunications technologies do so in spite of their rather low opinion of institutional administrative support for the endeavour. Left open to question, then, is whether or not a promotion and tenure system that recognized distance teaching in a traditional university would significantly enhance faculty willingness to participate. This issue will increase in importance for those campus-based institutions actively seeking to expand their current distance teaching efforts.

Faculty members *are* basing their decision to teach at a distance on their comfort level with the amount of control they have over the teaching-learning process in distance instruction. Those faculty who see distance teaching as lessening their control over course planning and delivery are significantly less willing to engage in distance teaching than are faculty who are not concerned with distance instruction lessening their control over instruction.

Evidently it takes experience with teaching technologies to be able to base a decision on them. In this study, experienced, but not inexperienced, faculty members' perceptions of the positive or negative effects technology has on instruction served as a secondary predictor of willingness to continue to teach at a distance.

Outsider pre-produced, as opposed to faculty-created, telecourse and other learning materials could be perceived by faculty as lessening instructor control over the teaching-learning process, as well as being indicators of the quality of a distance teaching course. To the degree that distance teaching coursework is seen as comparable to on-campus coursework, faculty members are willing to participate in distance teaching. "Comparable to" is evidently judged more on input factors (i.e., what the instructor does) than on output factors (i.e., student achievement).

How can faculty involvement in distance teaching be increased? These results suggest that, under current conditions, successful recruitment of distance teaching instructors from the ranks of full-time teaching faculty may best be encouraged by addressing the concerns faculty have about losing control over the teaching-learning process. The use of delivery modes and formats allowing for the greatest amount of faculty control ("candid classroom" videotaping as opposed to pre-produced telecourses, for example) may help to increase faculty participation. Increasing awareness of distance teaching and then allowing self-selection on the part of faculty members may well encourage those instructors who have the fewest concerns about loss of control to come forward. Furthermore, instructional planning and execution that recognize the authority of the course instructor as much as possible are likely to minimize faculty resistance.

Continuing education administrators should note the difference in views between inexperienced and experienced faculty members about the effects of technology on the instructional process. Inexperienced faculty are almost exclusively concerned with control over the teaching-learning process. Faculty experienced in distance teaching, on the other hand, see the use of technology for instruction as a co-determinant with control over the teaching-learning process in their willingness to continue distance teaching.

Finally, these results invite traditional research-based institutions to look more carefully at how their current promotion and tenure practices do, or do not, reward participation in distance instruction. Support from the institution is an essential ingredient for increasing faculty involvement in distance teaching.

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Evaluation of courses and resources

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SYSTEMS FOR TEACHING AT A DISTANCE

Distance teaching at the New Zealand Correspondence School involves four systems:

1. course design, development and production system
2. teaching, marking, feedback system
3. student support and guidance system
4. storage, access, distribution and retrieval system.

These systems are not discrete but overlap and interact, and some staff share their time between two or more systems.[1]

FIRST AND SECOND PHASE TEACHING AND LEARNING

In this paper teaching in the course materials is called *first phase teaching.* Subsequent teaching through marking, explanations, comments and remedial or extension exercises is called *secondphase teaching.* Similarly what students learn from the course materials is called *first phase learning* and what they learn from feedback is called *second phase learning.* The New Zealand Correspondence School has an interactive adaptable system of despatch and return of course materials so that there are up to 15 separate despatches during the course. Courses are designed to be supported by second phase teaching.

Teachers also take a lot of time and trouble marking student lessons positively, making encouraging comments, writing supportive letters, suggesting ideas, encluding supplementary resources with the returned work and adapting later lessons according to student progress.

Despite this most of the student learning seems to occur as they work through the sets of lessons, i.e. first phase learning. They certainly spend more time on this — some 10 hours/set of lessons in one subject compared with about half an hour reading and responding to the teacher's letter, comments and suggestions. Although students spend more than 90% of their time on *first phase learning* the Correspondence School only devotes 13% of teacher time and spends only 26% of the budget on course design, development and production, i.e. to *first phase teaching.* Not enough of this time and money in spent on course and resource evaluation — no more than 3%. Yet it is important that students learn well first time, don't have to unlearn, feel they are being well taught, are learning effectively and are making progress. The courses and resources are visible evidence of the teaching of a distance education institution and the success of students in learning from them affects status and credibility of the instructor.

Course design and development relates to other systems (2) and this relationship has to be considered in course evaluation, e.g.

- Is the course easy to teach from? Can it be easily adapted and individualised? How long do sets of lessons take to mark?
- Does the course provide for interaction, support and motivation?
- Is it easy to store, despatch and retrieve?

A relevant question is how much does it cost? What resources will be involved in handling and teaching the course?

HOW CAN WE EVALUATE COURSES AND RESOURCES?

Courses and resources can be evaluated against criteria — the *achievement of objectives.* Do the students learn from the course what the course developers intended it to teach? Course objectives are at several levels and there may be objectives for:

- teaching/learning the subject as a whole, e.g. mathematics
- teaching/learning the course, e.g. from 6 mathematics
- teaching/learning in each assignment or set of lessons
- teaching/learning in each lesson
- each teaching/learning point or activity

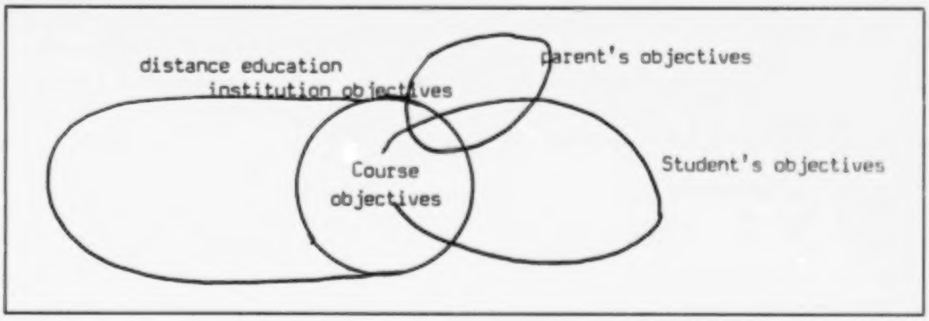
distance education institution objectives
parent's objectives
Course objectives
Student's objectives

Figure 1.

Students, parents, employers, the community or society, the teachers and the institution also have objectives or at least expectations of a course against which courses may be evaluated. See Figure 1.

The Correspondence School has, for example, objectives about course completion, student achievement, teaching time, storage, despatch and retrieval arrangements and costs for each course.

FOUR MAIN METHODS OF EVALUATION

Courses need to be evaluated during planning, development and operation. To evaluate courses and resources assessment instruments are needed. These can help in various ways to measure different aspects of student learning against course and unit objectives. (Figure 2.)

The New Zealand Correspondence School uses four main methods of evaluation:

1. use of proven and tried methods and procedures
2. use of expert distance teaching and course development experience and opinion
3. feedback from those involved: students, parents and teachers
4. statistical data on outcomes: time taken, examination results.

1. *Sound Course Development Methods*

Methods of course development should be based on:

- acknowledged education principles, e.g. in curriculum development
- sound distance education ideas
- accepted wisdom of course production
- proven experience in distance education, and in the New Zealand Correspondence School.

Using such methods may not guarantee a good course, but will considerably lessen the chance of producing a bad one. If a reliable recipe, knitting pattern or well-tried procedure for assembling a kitset are followed the end result is more likely to be successful. Distance education courses are much more complex artifacts, but the first evaluation

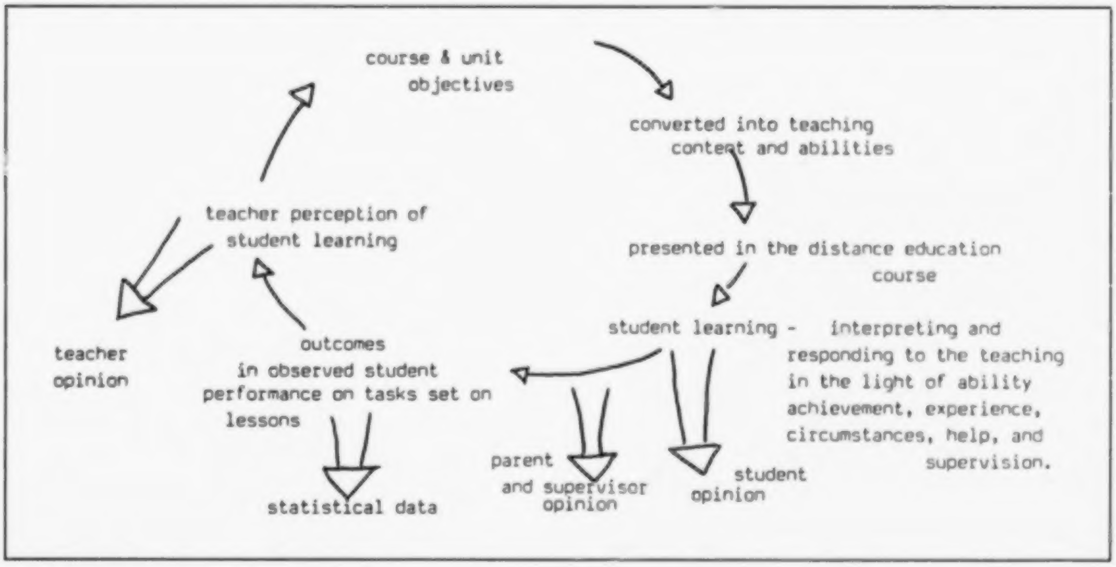
course & unit objectives
converted into teaching content and abilities
presented in the distance education course
student learning - interpreting and responding to the teaching in the light of ability achievement, experience, circumstances, help, and supervision.
teacher perception of student learning
teacher opinion
outcomes in observed student performance on tasks set on lessons
statistical data
parent and supervisor opinion
student opinion

Figure 2.

question is: Are the procedures being used to design, develop and produce the course sound?

Every attempt is made to ensure that the answer is yes by having a course planning and production procedure, a curriculum committee and a teacher with responsibility for course planning and development.

2. *Expert Opinion*

All stages of course planning, development and production in the New Zealand Correspondence School are evaluated by an experienced distance educator called a presentation adviser-editor (PA). There are 12 teachers who spend about 40% of their time on PA activities. For every 10 teachers in course development there is one PA.

These presentation adviser-editors are teachers with proven ability who have planned and written courses, taught these courses, learnt from student responses, revised and improved their courses as a result. They know the students and their circumstances and have learnt what will be effective with target students. They can work tactfully co-operatively and positively with teams of teachers writing courses.[2]

3. *Feedback*

- a. Overt or Explicit Student Reactions
    - student reaction sheet with each unit
    - student questionnaire at the end of a course — sense of achievement and progress?
    - student comments in scripts "I don't know", "I don't understand", "I can't do it".
    - student comments at seminars and study centres — does course or unit meet students expectations?
    - comments in student letters to their teachers
    - provide question sheets
- b. Inferred Student Reaction (Teacher Comment)
    - i. sections and exercises omitted in sets of lessons
    - ii. sections where work is done sketchily
    - iii. units and sections in which most questions are asked
    - iv. common errors in practice exercises and tests
    - v. instructions misunderstood
    - vi. areas of greatest misunderstanding
    - vii. sections where remedial teaching, resources are most needed

While much of the evidence may appear objective the reasons for it must be inferred. Maybe a student isn't interested, was disturbed or sick. A sufficient sample of responses should guard against such variation.

Teachers need a procedure and sheets for recording or a computerised recording and analysis system.

- c. Feedback from Parents or Supervisors
    - i. time students take on a section or unit — estimate by student or parent (3)
    - ii. questions students ask their parents or supervisors
    - iii. unwillingness/willingness to do the subject and/or unit — student interest or attitude to subject or unit
    - iv. difficulties students experience, e.g. finding materials and doing the activities
    - v. does the course meet parent or supervisor's expectations — are the students learning what the parents expected them to learn?
    - vi. do students get a sense of achievement and progress?
    - vii. the attitude of students when receiving postings of marked lessons and new lessons.

4. *Statistical Data*

- a. Student Performance — Gross Indicators
    - i. enrolment and withdrawal statistics Do the Students want the course? Are they satisfied with it when they get it?
    - ii. average number of units completed by dropout point
    - iii. rate of return of units, e.g. number of sets of lessons/student
    - iv. time students take to complete each unit and the course[3]
    - v. preparedness to take next level of subject
- b. Examination Results

    Public examination results are analysed each year by pass rates for all students by student types — full-time, part-time and students in other schools, for each subject:

    Correspondence School students alone

    Correspondence School versus national average

    Achievement by students in other schools in Correspondence School subjects versus their achievement in subjects studies in their home school.

- c. Achievement of Objectives
    - i. Achievement on exercises in the units is analysed
    - ii. Achievement on tests. Each question in revision tests is analysed against sets of lessons with the teaching for that question.
    - iii. Achievement on final test or examination on the course. Each question

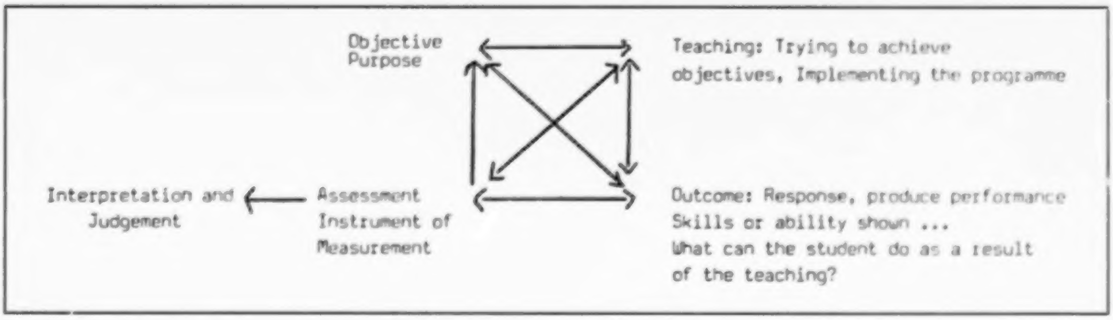
Objective
Purpose
Teaching: Trying to achieve objectives, Implementing the programme
Interpretation and Judgement
Assessment Instrument of Measurement
Outcome: Response, produce performance Skills or ability shown ...
What can the student do as a result of the teaching?

Figure 3.

in the internal examination is analysed against sets of lessons with theteaching for that question.

COMBINATION OF METHODS

Course evaluation if often an incomplete and unclear process. There may be many indications that something is not right with a course, units in a course or lessons in a unit, but the nature of the problem, reasons for it and how to remedy it may not be easy to identify. One reason for this is that course evaluation is not absolute — there is usually no objective standard or criteria against which to assess courses, and then evaluation requires judgement based on the assessment information.

Evaluation = Assessment + Judgement

While assessment or evaluation is in terms of achieving objectives, these objectives may be inappropriate, poorly expressed, pious hopes, or inappropriate for the target students. The teaching may be good but the assessed activities and tests may not follow from the teaching, may not test what was taught, or they may be unstructured, and assessing only the total outcome. When assessments are compared with objectives they may not correspond or have the same balance or emphasis.

Consequently in course evaluation it is wise to use a variety of methods and data as indicated above: expert course development opinion; student, supervisor and parent opinion, and statistical data.
See Figure 3.

TRIAL OF COURSES AND RESOURCES

The New Zealand Correspondence School does not carry out limited trials of courses before large scale production, because it takes too long, is too costly and leaves evaluation too late in the course development process.

It is certainly profitable to try out approaches and methods informally, or base teaching on successful experience. But there are problems of:

a. trying handwritten draft material which is not in final format
b. trying resources with a few individual pupils who are not a representative sample
c. trying with classes in schools, not distance students in the usual learning situation

Many problems can be circumvented by sound course design, planning and development procedures. In the Correspondence School the small two or three person course preparation team try out materials (i.e. objectives, plan, methods, etc) with

a. other members of the writing team
b. department teachers who will provide the second phase teaching of the course
c. presentation adviser-editor (PA) who acts as
   - surrogate student
   - school policy checker
   - distance education methods adviser
   - curriculum development adviser
   - suggester of teaching methods
   - logistics checker.

One year supply of a course is printed and the first year is considered a trial year. The department concerned:

- keeps a correction copy of the course
- monitors student feedback
- records supervisor feedback
- collects, collates and analyses statistics.

COST EFFECTIVENESS

An important part of course evaluation is relating perceived student learning to the costs of initial development and production and then of ongoing maintenance of a course. This includes the ease and speed of handling the course, of marking and of providing remedial resources or second phase teaching. Depending on financial circumstances evaluation on cost effectiveness can aim at either:

1. the same apparent learning for less cost
2. more student learning for the same cost.

COURSE EVALUATION STARTS WITH PLANNING

It is clearly wasteful of resources for course evaluation to be delayed until the course is completely produced. Each stage from planning through development to production needs to be evaluated. In the Correspondence School the process is:

Course Reviews — evaluation of all operating courses every two years

↓

Priorities for Writing/Revision established each year

↓

8 Year Writing Plan for all courses

↓

Approval of Course Writing for next year

↓

Authority to Commit Resources to Course Development

↓

Course Planning, Development, Production

↓

This involves evaluation at all stages as shown on the chart.

The New Zealand Correspondence is attempting to place more emphasis and allocate more resources to both course development and to course evaluation. The latter is absolutely necessary if the former is to be effective.

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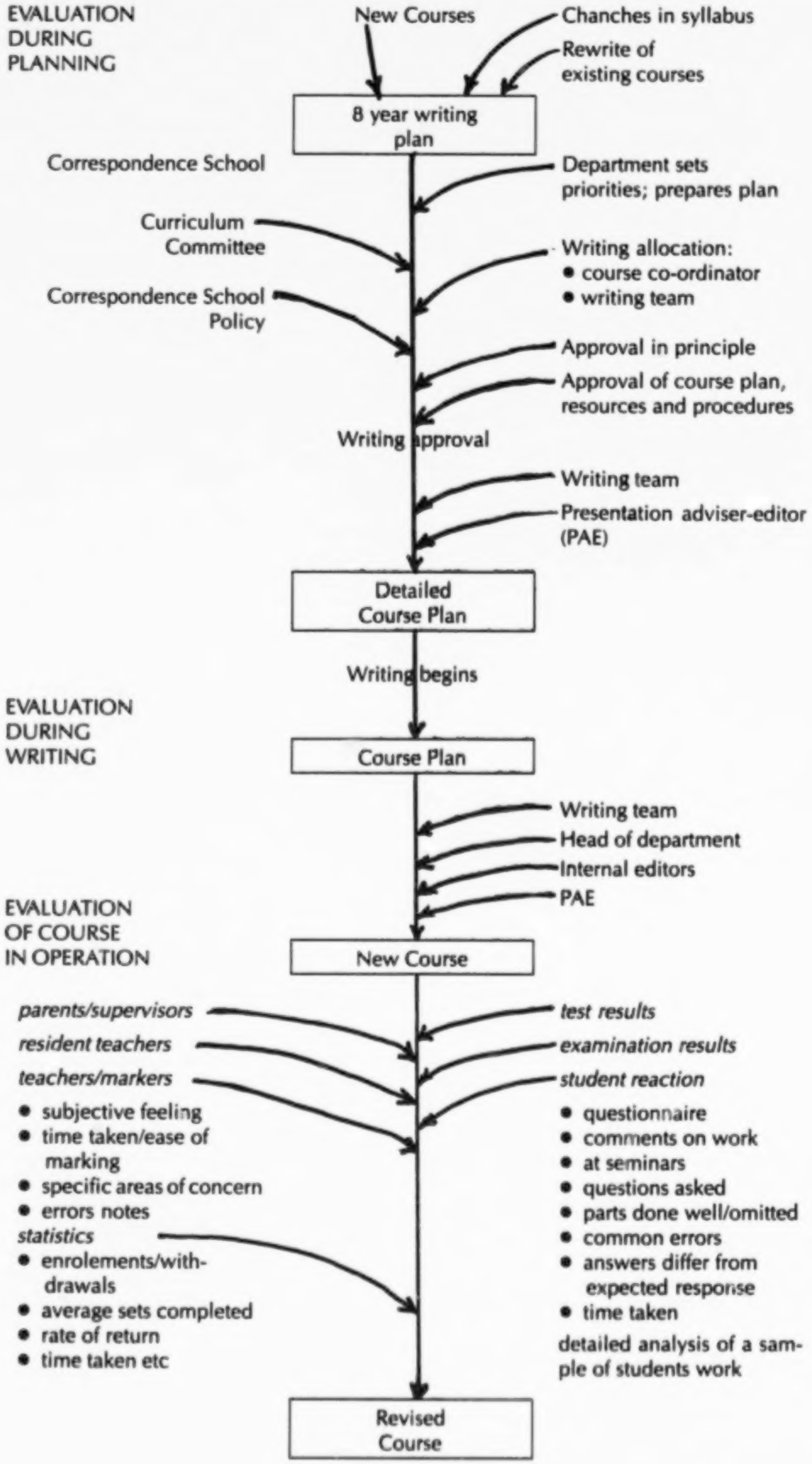
EVALUATION DURING PLANNING
New Courses
Chanches in syllabus
Rewrite of existing courses
8 year writing plan
Correspondence School
Department sets priorities; prepares plan
Curriculum Committee
Writing allocation:
• course co-ordinator
• writing team
Correspondence School Policy
Approval in principle
Approval of course plan, resources and procedures
Writing approval
Writing team
Presentation adviser-editor (PAE)
Detailed Course Plan
Writing begins
EVALUATION DURING WRITING
Course Plan
Writing team
Head of department
Internal editors
PAE
EVALUATION OF COURSE IN OPERATION
New Course
parents/supervisors
resident teachers
teachers/markers
• subjective feeling
• time taken/ease of marking
• specific areas of concern
• errors notes
statistics
• enrolements/with-drawals
• average sets completed
• rate of return
• time taken etc
test results
examination results
student reaction
• questionnaire
• comments on work
• at seminars
• questions asked
• parts done well/omitted
• common errors
• answers differ from expected response
• time taken
detailed analysis of a sample of students work
Revised Course

Assignment turn-around time — perceptions and processes

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INTRODUCTION

The Australian project on assignment turn-around time began in March 1987 following a successful tender for funding from the Standing Committee on External Studies of the Commonwealth Tertiary Education Commission (CTEC) — a statutory body which advises the Australian Government on the funding of tertiary institutions. The brief to applicants stated succinctly what the Committee wanted from the project:

Turn-around time for student assignments: what should be expected? how can it be achieved?

Slow feedback is considered by many to be a significant contributing factor in the drop-out rates of external students.

This will be an investigation of educationally effective and cost-effective methods of reducing turn-around time and could address:

- factors contributing to delays in turn-around time;
- means of reducing turn-around time whilst maintaining desirable standards;
- educationally effective and cost-effective applications of technologies to reduce turn-around time.

The literature on assignment turn-around time revealed pioneer studies undertaken by Rekkedal (1973, 1984) and Bååth (1975, 1979, 1980). The theoretical framework for studies of assignment turn-around was strongly influenced by the work of Tinto (1979, 1982) on student attrition. Although the study undertaken here builds on this tradition, two additional dimensions are covered:

- the administrative and academic *processes* of handling assignments;
- the various *perceptions* of students, markers, assignment handling clerical staff, student advisers, senior administrative and academic staff.

We were also very conscious of the importance of assignment turn-around in the context of student support services. Indeed, the Standing Committee on External Studies in its report to CTEC (1987) made the following statement:

After the student has enrolled there remains a continuing need for support and advice of many kinds. A student needs academic advice, or teaching — comments on assignments, directions to further reading, correction of errors, commendation of what is good; it all amounts to advice and support... (p. 66).

METHODOLOGY

While the bulk of the research was carried out at Deakin University in order to analyse one provider in depth, we contacted other institutions to determine their administrative procedures and their perceptions of turn-around times. Differentiating between theory and practice was not practical, however, outside the one case study. We hope this case study research will encourage similar studies of assignment turn-around.

The first analysis was of computer records of 1986 assignment traffic at Deakin University. Not all assignments were handled by the central, computerised system. In addition, omissions, apparent errors and inconsistencies, and assignments submitted after due date reduced the usable data. The data base left was far less substantial than first anticipated: 24.16%, representing 6,564 of the 27,159 assignments that went through the central system. Since there was no indication that the computerised system did not function adequately as an assignment tracking system until we manipulated the records, we suppose that until a rigorous analysis of an institution's records is made it cannot be assumed that the system is totally accurate, and meets requirements.

From the data we determined:

- the minimum, maximum and mean turn-around times as well as a summative statement for each course;
- the number of assignments submitted after the due date;
- the number of assignments that were returned before the next assignment was due, and the number returned at least ten days before the next assignment due date (where there was adequate

lead time between assignments to accommodate this); and

- the number of final assignments that were returned before the start of the examination period.

These facts were then compared to both students' and markers' perceptions of assignment turn-around.

Questionnaires were designed so that the responses could be processed using available statistical packages and the comments were handled manually. 514 valid questionnaires were received from students and 68 from markers, representing approximately a 50% response rate in both categories. Conclusions were drawn on a school (sometimes course) for postgraduate and undergraduate levels.

Interviews were held with markers and course coordinators where either extraordinarily long or short assignment turn-around time was apparent from the computer data and in response to questionnaire comments. At least two representatives from each of the six schools and each dean, as well as student advisors, key administrators and relevant staff from computer services were interviewed. This helped clarify what is likely to shorten or lengthen turn-around times.

CONCLUSIONS

That assignment turn-around is of concern was readily apparent. On a scale of 1 to 5, where 1 = very unimportant and 5 = very important, 84% of the 514 student respondents nominated 3 or above when indicating the importance of turn-around time for their study. Of these 23.3% selected 5. On the same scale, of 487 respondents, 90.7% (with 55.2% selecting 5) nominated 3 or above to indicate the importance of having assignments returned in time to be of value in the preparation of their next piece. Markers had very similar perceptions on this point. 91.1% of the 68 responding, nominated 3 or above, with 67.6% selecting 5.

However, turn-around is not an issue of equal significance to all students. Turn-around seems of less significance for students whose assignments have little (if any) sequential relationship. Working on isolated tasks, the pedagogical role of feedback is minimised and prompt return is significant only to indicate an overall standard. Students who are confident and experienced with off-campus study also tend to be less concerned with prompt feedback than their less confident, inexperienced counterparts. Assignment turn-around seems most critical for first year students (especially for the first assignment) or students who are involved for the first time with a particular course, off-campus study, or the particular institution. Those students who use other feedback (such as telephone, electronic mail, study centre contact) are, again, less dependent on assignment turn-around. In this regard isolated students (and especially those overseas) appear particularly dependent on rapid return of their assignments.

Whilst clear and realistic guidelines should promote efficient turn-around, it would be inappropriate to specify an arbitrary period. It is necessary to recognise divergence: in courses with weekly assignments, and where electronic mail is utilised, a turn-around time of more than a day may well be considered excessive; in courses with two major essays a semester, using conventional postal services, a turn-around time of twenty-one days may be most acceptable. It is apparent that students whose work is sequential should receive feedback from their work in time for it to be of use in the preparation of their next assignment. Students whose work is below acceptable standard (especially when requiring resubmission) need immediate indication. This suggests that institutions will have to set their assignment dates more carefully and clarify the instructions they provide to markers and moderators. As turn-around is a highly sensitive matter, we suppose that successful introduction of guidelines requires full discussion with the academic staff involved and some consensus.

The research gave compelling indications that the promptness of feedback had a significant effect on the way the students perceived themselves, the course personnel and the university as a whole. Where return was handled efficiently students' morale and confidence were boosted. Conversely, anxiety, dissatisfaction and even hostility were generated by tardiness. Whether assignment turn-around has a causal relationship with students' results is difficult to gauge. The clearest connection is where students receive useful comments in time for them to be applied to other work (including examinations), so enhancing their results. Of general concern is the possibility of a link between slow return of work and attrition. A clear causal connection was found in one particular course but the situation was atypical: no assignments had been returned for the first semester. In all other cases, students who commented upon decisions to withdraw stated that assignment turn-around had no relevance, or was a minor factor.

Many students slow their pace of study if they wait for feedback before completing the next assignment. This, in turn, slows turn-around time if the students seek extensions. While some courses have stated policies regarding extensions and penalties for late submissions without adequate excuse, in practice lateness is very common (9,930 of the 16,626 assignments with full data) and excessive lateness is rarely penalised. The situation is worse where it is stated policy and practice not to finalise marks and return work until all assignments have been received. It may seem logical that students who submit their assignments late should have them assessed at the marker's convenience and forfeit their rights to prompt return, but, in practice, most markers find that work received late, often in ones and twos, is best marked immediately "to get rid of it" and because, by then, standards and expectations have been established, the task is a quicker and easier one. Thus, ironically, these students are often the most advantaged in terms of turn-around time. It is students who submit early who seem to be the disadvantaged group. While most students who fit this category do so for their own convenience, in some courses early submission is advocated and some students get work in early hoping to expedite return. What generally happens is that these students work is held until the due date (on the pretext that it is necessary to mark a sample before finalising results) and rarely do they then receive preferential treatment. A reconsideration of policies on lateness and extensions, recognising their effect on turn-around time for students who do conform to the set requirements, is therefore recommended.

If speedy return of thoroughly corrected assignments is to be achieved, recognition needs to be given to pressures placed upon markers. Although markers who choose to mark in several courses (and not necessarily with a single institution) bring such a pressured situation upon themselves, those administering the central system should probably be aware of this indication of clashes likely to lead to slower turn-around. Distraction and competing commitments are major causes of delay. To assist efficient marking, it seems necessary to ensure that markers receive clear indications of when assignments will be sent to them, the form they will take, the number they will receive and the date by which return is expected.

Just as it appears essential to give greater support to inexperienced students, so too should greater support be given to inexperienced markers. Not only should they receive clear guidelines, but also fewer scripts. As students look for feedback on their efforts, so markers should be given a clear indication of how their work is perceived. Isolated markers are as vulnerable to lack of support as isolated students. We suggest that teleconferencing should be used to enable markers working in common areas to communicate. This would clarify expectations, help solve any problems and assist in standardising marking. We believe that if markers were then more confident about their task they would work more efficiently. Thus turn-around time should be reduced.

As the student's attitude is important, so, too, is that of the marker. Some senior academics confessed to a dislike of marking and a tendency to look for other "more important" academic matters. A few part-time assessors felt that they were "exploited" in terms of salary and conditions and thus it was not incumbent on them to inconvenience themselves to complete work speedily. Equally a problem in the context of assignment turn-around are the especially conscientious markers who find the notional time indicated (and by which they are paid) inappropriate and for quite different reasons can feel a sense of exploitation. The solution to this lies in better communication with those marking, especially when they are part-time and isolated from the institution.

Administrative procedures must support both students and markers. As assignment turn-around is an important aspect of student support, a complete assignment tracking system that provides accurate and comprehensive records for all students in all courses should be established. The system should provide the date assignment is due, date of receipt from the student, date sent to marker (named), date returned from marker, and date returned to the student. Facilities should be included to indicate where work has been re-allocated, moderated, re-submitted, and where an extension has been given. While it seems normal procedure to contact students when their work is overdue by a set period, it seems desirable to have a similar alert for markers whose responses seem unacceptably tardy. This would also give a much earlier indication than is presently the case where assignments go astray between the institution and the external marker. The aim should be an assignment handling system that can operate as an effective information management system and provides regular status reports for the deans and course co-ordinators.

Handling assignments efficiently, therefore, depends in large part on the attitude of all those involved. Where it is a priority, assignment turn-around is likely to be prompt. So the crucial thing is to make efficient assignment turn-around a stated priority of the institution and to provide an effective information management system that reflects this priority.

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Developing Non-Traditional Education in Hong Kong

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THE EDUCATIONAL SYSTEM

The long tradition of an erudite Chinese culture grafted onto a colonial system which rewarded educational accomplishments with government employment has produced a popular hunger for education infrequently matched in other parts of the world. Together with a belief in the virtue of hard work as a principal ingredient of study and a disdain for Western notions of individual differences in intelligence, this hunger results in strong family support for schools and for the progress of students as far through the system as it will permit them to go (Brimer, 1985, p. 2204).

The system is highly competitive throughout. Standardized tests are administered at several crucial steps. "The emphasis throughout the system is upon academic achievement and although there is the appearance of fairness, there can be no doubt that those who come from socially or educationally advantaged home backgrounds have much greater opportunities to enter tertiary education" (Open Education, 1985, p. 2).

Enrollment data from Hong Kong illustrates just how competitive and elitist the educational system is.

Table 1
Enrollment as a Percentage of Cohort at Each Level

Level	%
Kindergarten	85–90
Primary	99
Forms 1–3	96
Forms 4–5	60--70
Forms 6–7, Postsecondary	8–10
University and Polytechnic	3–4

International Encyclopedia of Education, 1985

In approximate numbers, using 1980 data, there were 552,091 primary students; 55,000 form 6–7 and postsecondary students and 22,000 university and polytechnic students. In contrast to the United States, where, according to UNESCO figures for 1982, there were 5,355 students enrolled for 100,000 population, Hong Kong enrolled only 1,353 students for 100,000 population (Statistical Yearbook, 1985).

As one would expect, the system is conventionally structured. Decisions made at the time of entry determine almost all of a student's course of study. The modular course system is not a common usage. A clear distinction is made between degree holders and those who graduated from an institution granting only a diploma.

CONTINUING EDUCATION IN HONG KONG

Given the limitations on degree places, continuing education, or extra-mural education as it is called at some of the institutions, is in great demand.

The numbers are impressive. The University of Hong Kong averages about 24,000 enrollments per year; The Chinese University 33,000 a year; and Hong Kong Baptist College some 35,000 enrollments per year. They obviously are helping to meet a great need. But are limitations.

Many of the certificate programs, especially those at a higher level, have requirements similar to if not the same as full-time degree study. "There is thus a tendency for opportunities in continuing education to be constrained by the student's attainments in (full-time) secondary education: (Education Commission Report #2, 1986, p. 141).

The Education Commission, charged by the Government to conduct a study of several areas of education in Hong Kong, stated in its second report in August of 1986, that continuing education courses "do not lead into the mainstream of academic qualification associated with higher education. They are not building blocks; they are only self-contained vocational qualifications" (Education Commission Report #2, 1985, p. 140). We will return to these issues when we assess the future of non-traditional education in Hong Kong.

The limitations of the continuing education options, coupled with the limited number of degree places and high demand, have opened the way for foreign institutions. A survey conducted in 1987 identified twenty-six foreign institutions offering programs in Hong Kong. Fifteen of these institutions offered degree programs — ranging from the associate through the master's. At least half of the programs involved distance learning.

THE OHIO UNIVERSITY PROGRAM IN HONG KONG

Ohio University's External Student Program enables a student to work toward a regular degree, usually the Bachelor of General Studies or Associate of Individualized Studies, by means of correspondence study, course credit by examination, independent study projects, assessment of prior learning, CLEP tests and course work taken at a local institution. The Ohio University credit options are considered resident credit. The student, therefore, does not need to come to campus. Consequently, students enrolled in our program come from almost all fifty states and several foreign countries.

Ohio University is offering its program in Hong Kong in cooperation with the Division of Continuing Education of Hong Kong Baptist College — a private institution recently brought under the purview of the University and Polytechnic Grants Committee.

If overseas students can already enroll in our External Student Program, what is unique about the Ohio University-Hong Kong Baptist partnership? What we have done is set up a system which provides a great deal more support and structure than is normal for correspondence students.

HKBC is involved in recruiting and preliminary screening, administration of several placement tests, providing advice on the appropriate program of study and making available a staff person to handle general student problems. They also have arranged for students to use the College library, handle all book purchases and administer course examinations.

One of the most innovative features is the special instructional help students receive. They are permitted to sit in on HKBC continuing education courses if there is a reasonably close fit between that course and the Ohio University course. If there is no fit, the Division of Continuing Education hires a tutor to assist the student. The Division of Continuing Education adds a surcharge to Ohio University's fees to help defray the cost of their services.

Ohio University maintains total academic control: admissions, examinations, grading and awarding of academic credit and control over all advertising for the program.

A brief analysis of background information on the 181 students enrolled in the program reveals that the mean age is 28.9, 55% are males, 31% are married and the average number of years of work experience before entering the program is eight. More than 90% are employed in the private sector with administration/management comprising the largest single work category.

Precise socio-economic data is not available, but the fact that 71% of the students attended government or government aided schools, rather than private (only 25%), indicates that the overwhelming majority of students are not from the higher economic strata of Hong Kong.

THE FUTURE OF OPEN EDUCATION IN HONG KONG

The presence of foreign institutions is indicative of the demand for non-traditional education in Hong Kong. The government has responded cautiously to this pressure.

The Board of Education, appointed by the Governor, advises the Government on educational issues. The membership is drawn from the schools, higher education institutions, sponsoring bodies and from the community at large in so far as the individuals have demonstrated an interest in education and training. For the most part, the Board advises on matters referred to it; on occasion, however, it can initiate issues for discussion (Brimer, 1985, p. 2307).

It was just such a Board of Education initiative, responding to interest in open education as well as other issues, which led the Government to create a Visiting Panel to undertake an overall review of education in Hong Kong. The review was undertaken in 1981–82 and the Panel's report "A Perspective on Education in Hong Kong" was issued in November, 1982 (Education Commission Report #2, 1986, p. 1).

A major focus of the Panel's study was on open education at all stages of education. The report noted "access to education for all a any period of life... ought to be a basic tenet" (cited in Education Commission Report #1, 1984, p. 72).

Responding to the building interest in some form of open education, the Government asked the University and polytechnic Grants Committee in July, 1983 to consider the feasibility of an open university in Hong Kong. The UPGC is a quasi governmental agency which acts as a buffer between the Government and the Universities and polytechnics. Its role is to recommend funding levels for the supported tertiary institutions, approval of new programs and growth rates for the system.

We have been using the term open education but what exactly did the Government mean by the term? An open university, according to government's charge to the UPGC, is distinguished from a traditional university in four ways:

Less rigorous entrance qualifications; study conducted away from a campus as a norm; the majority of students being employed; and distance learning methods being employed. However, standards of attainment were to be similar to those of traditional universities (Education Commission Report #1, 1984, p. 111).

To summarize the UPGC did not recommend an open university based on the British model in their report. The UPGC stated that a single institution devoted to open education would be too expensive and the human resources were not available in Hong Kong. It also noted the lack of an appropriate home environment for such students. The report did, however, support open education in the sense that not one institution would be devoted to nontraditional education but that the existing institutions could cooperate to provide degree programs to working adults by distance learning methods (Education Commission Report #1, 1984, p. 112–113).

In April of 1984, several months before the UPGS responded, the Governor created an Education Commission; the Commission was created in response to the Visiting Panel's report. Its charge was:

1 to define overall education objectives, formulate education policy, and recommend priorities for implementation having regard to resources available;
2 to coordinate and monitor the planning and development of education at all levels; and
3 to initiate educational research (Education Commission Report #2, 1986, p. 1).

The Education Commission became yet another actor among the several governmental agencies involved with education. Just how the Commission was to "coordinate but not seek to direct the work of the Board of Education, the UPGC and the Vocational Training Council" (Education Commission Report #2, 1986, p. 1) was unclear. A number of leading citizens of Hong Kong, both British and Chinese, were appointed to the Commission.

The first report of the Commission was issued in October of 1984, several months after the UPGC had responded to the issue of an open university in Hong Kong. The Education Commission basically deferred until a later date on the whole question of open education. It did, however, agree with the UPGC in not recommending a single institution as an open university. Their first report did state "we are, however, very much aware of the demand for more tertiary level opportunities and consider that alternative forms of attendance should be developed to allow for an expansion of educational opportunities at the tertiary level" (p. 75).

There was considerable interest, therefore, in the second report of the Commission. Issued in August of 1986, the report stated "we consider that there is a prima facia case, both social and economic, for an open education programme which will supplement conventional education and provide opportunities for those who otherwise would be denied them" (p. 139). The proposed program should also incorporate the distance learning approach.

The report called for the five tertiary institutions receiving support from the UPGC to form a consortium, on a voluntary basis, to operate the open education program. "The consortium should be the entity in which the students enroll, rather than in an individual participating institution, and the awards given to students should be in the name of the consortium" (p. 153).

Many questions are raised by this recommendation. But the fact that the Commission made it suggests that the government will soon establish some type of non-traditional degree granting institution. As this agency establishes itself and grows, the role of foreign institutions will probably change. They most likely will have to establish cooperative relationships with individual members of the consortium if they are to maintain a presence in Hong Kong.

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Distance education — the trend setter

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METAMORPHOSIS

In the last decade a metamorphosis has occurred. Distance education in Canada has been transformed from the ugly duckling to the elegant swan. With this metamorphosis has come increased respect and credibility for distance learning. The quality of distance education is being widely recognized, and the potential of this mode of learning is generating interest in educational, commercial, and political circles. Many educational authorities are now seriously considering the possibility of distance education providing a viable alternative to labourintensive and increasingly expensive conventional teaching.

GROWTH INDUSTRY

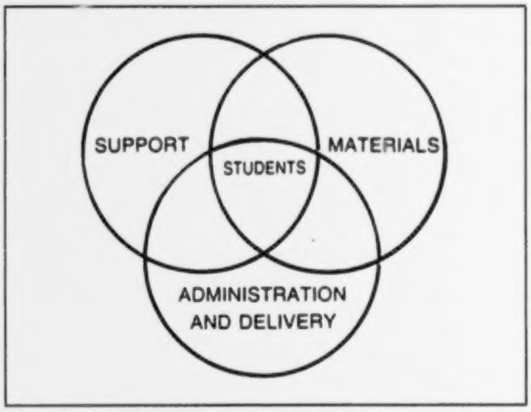
Interest in distance education is not, however, being driven by the power structures in society. The burgeoning interest in distance education is coming very much as a ground swell as more and more students opt for this means of furthering their education. Gough (1980:1) has described distance education as a growth industry in Australia and the same is certainly true in Canada. In the last ten years, registration in Alberta Correspondence School courses has doubled. During the 1986–87 school year, some 31,300 new students registered in 50,200 courses. In addition, some 7,000 students who were enrolled with school prior to September 1, 1986 continued their work on over 12,400 courses.

This trend towards an increasing demand for Alberta Correspondence School services is likely to continue because distance education enables students to achieve their educational goals in a highly efficient, effective, and yet personalized mode of learning. For many students, distance education or correspondence education is actually the preferred form of learning as, according to Hathaway (1977:164), correspondence education comes closer to the ideal form of learning than does conventional classroom learning.

NEW WAVE

During the first half of this century, distance education was viewed as a deviant mode of learning, and it offered no challenges to existing educational structures. Now distance education techniques are leading the way and transforming conventional classroom methodology. Effective distance education systems do not attempt to replicate traditional methods of classroom instruction. Distance education is freed from many of the constraints of classroom learning which is time and place specific.

One of the primary strengths of distance education is its student-centred approach to learning. By its very nature, its inherent flexibility, distance education can readily accommodate individual student needs, varying learning styles, diverse geographic locations, and erratic time schedules. The following paradigm developed by Payne (1985:1) demonstrates the student-centredness of a distance education technosystem.



Distance education technosystem.

Distance education, so second best, is now part of the new wave as distance education institutions are well positioned to take advantage of modern information processing technologies.

PRACTICE OF DISTANCE EDUCATION: THE ACS APPROACH

Distance education institutions have traditionally been viewed as equity institutions. They have provided opportunities for students who could not otherwise continue with their studies.

By delivering educational services to students in difficult circumstances and locations, distance education has contributed to the growth and development of the individual for the betterment of society as a whole. In filling this particular vacuum in the educational system, distance educators have developed approaches which many consider will become the norm in the future when highly personalized programmes will be accessed at a time and place convenient to the student.

The Alberta Correspondence School (ACS) was established in 1923 to provide educational services to students who did not have ready access to schools. Since that time ACS has become an integral part of the educational system of Alberta. Its function today is to provide opportunities for students with unique learning needs to continue their studies.

The operation of ACS can be considered in terms of the three sub-systems identified by Payne (1985:1) — materials, support, and administration and delivery. The essential purpose of each of these subsystems is to meet student needs.

1. Materials

ACS has the capacity to produce instructional materials in a variety of media e.g. print, audio, video, and computer courseware. With the range of media and technology presently available, the course development team can select the medium which is both appropriate and motivational. Although print is a very powerful medium which continues to be most effective in delivering education at a distance, other media can be a valuable asset in the learning process. The media selected must, however, be

- easy to use.
- inexpensive.
- flexible as to time and place.
- readily accessible by students.
- acceptable to students.

2. Support

The model of distance education which has been widely adopted in Canada is Peters' industrial model. Peters (1983:95–113) has established that learning at a distance is an industrial form of education which is highly cost-effective. Consistent with this model, ACS has devised systems that offer quality educational services for approximately one quarter of the cost of classroom instruction. Since ACS must provide extremely cost-effective services to a large number of students, the School has developed highly structured programmes and has kept support services to a minimum. Nonetheless, individual needs can be accommodated as students are placed at a level appropriate for them and they progress as their own rate. In addition, individual feedback and assistance is given to students when they submit their lessons for correction and whenever they contact the teacher by telephone.

3. Delivery and Administration

In delivering educational services to students, the focus of ACS has been on offering programmes which are independent of time and place since fixed schedules and specific locations are not acceptable to correspondence students. Various experiments in broadcast and on-line systems have been conducted and abandoned because they did not meet client needs and they were quite expensive. Consequently, ACS depends primarily on the postal system for the delivery of the learning packages — print materials, laboratory kits, audio and videotapes, and computer diskettes.

Other delivery strategies involve establishment of a study centre in Edmonton, utilization of computer networks, and collaboration with local school jurisdictions and educational institutions.

Study Centre — The study centre in Edmonton provides Edmonton area residents with ready access to ACS services. This centre handles local telephone inquiries, inperson registration, and testing facilities for students.

Computer Networks — The Data Base for Administration of Correspondence Students (DACS) was designed to aid in the processing and record keeping of registrations, sales and shipments, client accounts, and student lesson and test results. This system has facilitated the processing of student registration and the tracking of student progress and has enabled ACS to provide more efficient services to an ever increasing number of students, with no increase in manpower.

ACS is also tied in to the E-NET system which allows it to communicate with participating school jurisdictions and external agencies.

Collaborative Efforts — In addition to providing full instructional services to students, ACS has entered into many co-operative arrangements with schools and colleges. The level of service varies according to local need. ACS may supply instructional materials, offer instruction in only a portion of the course, or administer examinations.

ACS has, of necessity, been sensitive to client preference and has concentrated on developing programmes which can be accessed at a time and place convenient to the student. Such arrangements give the student a large measure of control over the learning situation, and this undoubtedly contributes to a heightened sense of personal effectiveness.

NEW SYSTEMS FOR A NEW AGE

1. Influence of Prevailing Technology

The educational system of today is a product of its time. It is part of a very long tradition of students travelling to the teacher. In the past, most students could walk or ride to the small local school. Others travelled long distances to boarding school. Only the privileged few were educated at home under the guidance of a personal tutor.

As Western society changed from an agrarian society to an urban/industrial society, new technologies led to the development of new structures and institutions in society. The educational systems were affected as profoundly as any other segment of society. During the period of industrialization, the transportation technology advanced rapidly and had a dominant influence on social structures and institutions.

2. Maintaining Equity

In Alberta, the drift to the cities accelerated during the 1940s and 1950s, and the small rural schools were no longer viable. The solution to the problem of providing ready access to educational services was found in the well-developed transportation technology. Rural schools were consolidated and students were bussed to central schools.

Since then, the rural population has continued to decline and transportation costs have increased dramatically. Eventually the reality had to be faced that further centralization was no longer feasible. Even though transportation technology has been exploited to the fullest, in the thinly populated regions it is no longer logistically possible for busses to deliver all students to schools every day. A new solution to the problem of providing equitable educational opportunities for all students regardless of location and circumstance has to be found.

3. Personalizing Education

Now we must turn to the new information processing technologies to solve these problems and to build educational systems appropriate for the post-industrial society. In the information age, education will not be confined to the classroom. Students may have little need to attend school on a regular basis. The new technologies will take learning to the student rather than transporting students to the halls of learning.

The telecommunication-electronic technologies will also reverse the traditional direction of access to educational services. In future, we can expect teachers to deliver their services to students. They will reach the student through various media. The students will be regarded as consumers of educational services and the educational authorities will be involved in marketing their products and services. Students will be in a position to direct and control their own learning and to demand personalized educational services designed to meet their unique needs.

The industrial revolution freed us from heavy manual labour. In the information society, we will be freed from arduous mental labour. The shift has been from muscle power, to brain power, to mind power. The industrial revolution created a demand for goods. The information processing revolution will create a demand for services. In this new age emphasis will be placed on humanizing our structures and institutions and personalizing services.

The tools are now available for our society to build powerful distance learning systems which will provide personalized educational services. In the next few decades, the telecommunication-electronic technologies will enable us to alter radically the way we deliver many educational services. Then we will be able to focus on the development of the human mind and spirit to its full potential. Distance learning will set the trend in education into the twenty-first century.

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Special education personnel preparation: An integrated distance education model

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INTRODUCTION

The Board of Regents of the University of Alaska has delineated special education as one of five statewide programs on the Anchorage campus. The Special Education Program at the University of Alaska Anchorage offers Alaska's only accredited certification and Master's Degree Program in Education with an emphasis in Special Education. The intent of the program is to prepare quality professionals who have competencies in basic special education and assessment and intervention techniques to work with children and youth, at the elementary and/or secondary levels, who are identified as learning disabled and who may also manifest concomitant behavioral problems. Upon completion of the special education program, graduates are prepared to work as resource/teacher consultants; itinerant/materials specialists; and/or, self-contained special class teachers.

The University of Alaska Anchorage also offers an undergraduate non-certification minor in special education for elementary and secondary education students who have an interest in working with handicapped student populations and who plan to enroll in a graduate program in special education upon completion of their baccalaureate degrees. All coursework in the undergraduate concentration meets prerequisite requirements in the graduate certification or degree program.

The State of Alaska covers a land mass of 587,500 square miles, while its population slightly exceeds 450,000 people. Most of the population resides in the Anchorage area, but there are 150 communities with populations of less than 5,000 people. Approximately 40% of all Alaskans are located in communities of less than 1,000 people. Most of the rural communities are accessible only by light aircraft, as road systems to these areas are almost non-existent and distances between these villages are substantial.

The 55 school districts in Alaska serve many students who are native Alaskans and those who represent other cultural and linguistic groups. Many of these students have special education needs compounded by bilingual and multicultural differences.

Since many educators reside in rural and/or remote areas as described above, there are few opportunities for professional development due to limited access to universities. The result of this isolation can be devastating to morale, competency, and job longevity. High attrition is a common phenomenon in rural and/or remote regions; personnel seldom remain longer than two years. Many elementary and secondary educators are not trained adequately in effective teaching techniques for handicapped students who, because of federal legislation and least restrictive enrivonment considerations, will be placed in regular classroom settings for at least a portion of their day.

We describe two federally funded projects awarded to the Special Education Program at the University of Alaska Anchorage.

RURAL SPECIAL EDUCATION PRE-SERVICE PROGRAM

The project is designed to provide pre-service training in the area of special education to educators who reside in rural and remote areas of Alaska. The target population includes teachers who are preparing for advancement or career changes, or who are teaching mainstreamed handicapped students. Geographical constraints prevent them from attending campus.

The objectives include two phases. Phase I consists of the development of approximately 33 semester hours in core courses (introductory concepts, behavior management, teaching techniques, and individualization skills) and specialized coursework (theory, rural special education considerations, assessment and intervention) followed by practical field experiences. Attainment of competencies is accomplished through:

a. lecture/discussion
b. audiovisual presentations
c. texts and additional printed material
d. resource speakers
e. examinations
f. presentations of case studies
g. simulation and role playing activities; and,
h. practicum experiences

Phase II of the project involves the delivery of coursework. This is to be accomplished via the Alaska Telecommunication System, a network with three types of communication technology. These are used separately and together and include:

a. audio-conferencing (speaker-telephone systems)
b. video and audio cassette instruction; and
c. computer service (to deliver instruction and serve as a "mail" exchange)

RURAL SPECIALIST PROGRAM

The Special Education Program has been awarded a second Rural Special Education Grant by the U.S. Department of Education. This grant project focuses on developing and implementing a pre-service personnel preparation program which includes competencies in special education, counseling, and substance abuse counseling/treatment. The program is designed for regular and special educators at the graduate level who reside in rural/remote regions. These educators currently work with linguistically and culturally different learning disabled students. Through this grant students can receive a Master's Degree with a rural specialist emphasis in Special Education.

Phase I of the grant concerns development and implementation of interdisciplinary graduate level coursework in special education, counseling, bilingual education, substance abuse and research. These courses will serve as a component of the existing campus program. All rural delivery courses are identical in content and requirements to the campus courses. An on-campus instructor is assigned to each course.

DISTANCE DELIVERY MODEL

The distance delivery program courses are identical to courses offered on campus with the same instructor and course content. Instructors prepare 10 to 14 video or audio cassette lectures. Courses are organized into three modules; the material for each module includes corresponding video/audiotape lectures; a printed module handout booklet with individual class outlines, lecture note-taking guides, class handouts, and related articles; and supplemental materials for class assignments. In addition, each course provides a printed booklet with course syllabus, assignment sheets and a course matrix/calendar which outlines learning activities (dates for audio-conference, class meetings, assignments and examinations). It is extremely important to provide students with a timeline to prevent their getting side-tracked during the semester.

One of the drawbacks of distance education is the students' lack of connection to a program/instructor. Course matrix outlines are one way to ensure some connection and structure. At sites where there are one or more students, participants are encouraged to meet with their group on a weekly basis to view and discuss video lectures. This group meeting also provides students with a sense of belonging and a support network. Instructors and project staff offer additional support to students via telephone, letters, on-site visits, and audio-conference calls.

One on-site visit is made to each location on a semester basis to foster program involvement and student support. This visit serves as an opportunity for students and UAA Special Education staff to meet. Students indicate that faculty visits help them to develop a sense of being connected to the University. Once they meet faculty members, their motivation increases to complete the coursework and to enroll in additional courses.

UAA's faculty feels the best use of audio-conference time is to provide another means of student support. Each course has four audio-conferences throughout the semester. Three audio-conferences involve all sites and include all students enrolled in that particular course. The purpose of the call is to make course announcements and to provide students contact with each other. The instructor plans a topic for each audio-conference and serves as a monitor for student interactions. The fourth audio-conference is an individual point-to-point conference between the course instructor and site participants. The purpose is to provide students with an opportunity to discuss individual concerns.

The drop-out rate is usually higher with distance delivery courses. Studies have indicated that distance delivery courses have a drop-out rate that ranges from a 30% to 90%. The reasons for a higher drop-out rate include peer pressure, weak facilitators, and lack of student support systems. Research must be conducted to determine the best methods to keep the attrition rate as low as possible. As faculty continue to deliver courses to rural/remote areas, they compile feedback and suggestions for the improvement of the project's service delivery model system.

Suggestions to reduce attrition rates include strong facilitators at each site; setting scheduled meeting times among students at each site; unscheduled telephone calls to students to assess their progress; and instructor site visits at the beginning of each semester.

Faculty involved in the special education distance delivery programs at the University of Alaska Anchorage are enthusiastic about the prognosis for the projects. The list of ideas regarding program refinement continues to grow. They believe that distance education is a viable delivery system, and, with the continued support and flexibility of both students and instructors, the system can be extremely beneficial to students who teach in rural Alaska.

Higher education and equity; instituting policy awareness

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Although equity as an ideal has enjoyed a history at least as old as the beginning of public education in the Original American Colonies, the policies meant to promote equity (perhaps due to their very nature) are often ambiguous and always subject to a great many interpretations. Any expectation that mankind may be approaching this ideal would probably be said to be premature. In some countries, equity may no longer seem important. There is more information than ever before and technology seems to be on the brink of making it all readily available, at least in the so-called developed countries. But what about in other parts of the world? In much of the world, equity and access to update information in higher education remain wishful, albeit, admittedly saleable ideas. The call for equity in the seventies has found an advocate. A number of higher distance institutions such as the Universidad Nacional Abierta (UNA) of Venezuela were founded on this principle.

Establishing policies for providing education in the less developed countries (LDCs) has become an extremely complex task. Policy makers worldwide face the prospects of rapidly changing job markets, growing numbers of workers whose skills are obsolete and outdated systems of education. It could be said that nowadays every educator makes policy. Perhaps administrators of higher distance universities should examine the potential benefits of helping educators become more enlightened policy makers.

The expected outcomes of increasing or decreasing equity have not all been analyzed. Leaders may prefer to ignore the results of increasing equity if they could, but the implementation of policies at all levels of the university, may or may not foster equity and they may be contradictory. Distance universities are different from their traditional counterparts. There may be a need to increase the analytical awareness of the principal policies governing these institutions. Furthermore, equity has some opponents since it is often claimed to rule out excellence in education. Equity may even lose ground as an educational goal unless parameters delimiting how it is to be pursued are established.

At the risk of over-simplifying, it is hard to imagine that intelligent people may fail to realize that these goals are not necessarily mutually exclusive and that educational technology might be used to facilitate searching for solutions. And if this underlying assumption is accepted, distance mode higher education appears to have the potential to become one of its most powerful vehicles. Understanding a bit about the definitions and workings of policy is one means of initiating increased policy awareness. We hope ideas expressed here exemplify some of the kinds of issues to be dealt with in enhancing policy awareness.

Despite the fact that educational policy can be defined in numerous ways and analyzed from many perspectives for different purposes, we have selected the following descriptive definition for the purposes of this paper. Educational policy can no longer be accurately thought of as a statement of the decisions and goals of the administration from the top down. Policies are defined as an understood direction or governing thrust — that may be implicit or explicit and may be authorized, enacted and implemented or simply implemented — which establishes goals, standards and set procedures. In some policy analyses, the whole concept of policy breaks down when contradictions in policies or misimplementations are discovered. This leads to the assertion that the systems analysis approach lauded by most distance education institutions may need to extend to the testing of the interplay of operational level policies against a backdrop of the principal policy directions which should promote both self-correction and increased congruency.

Equity is defined, for our purposes, as the offering of access to similar educational opportunity and providing adequate means of acquiring information and knowledge, relevant both to the individual's and society's needs. In light of the current economic conditions in the LDCs, however, this opportunity must be delivered without exacting an unduly high cost to either. Moving towards these goals of equity depends in large part on the overall success of the distance education mode.

In this paper we analyze how and under what circumstances distance education could become an important vehicle to bring about increased educational equity. We begin with some general considerations about the relationship between this particular educational mode and equity. Then some factors and sets of factors which may affect this relationship will be indicated through a brief analysis made within the context of the UNA of Venezuela. The UNA as a distance learning institution is engaged in a continuous struggle to promote distance learning in Venezuela, assessing its ability and potential for bridging more gaps.

Third World politicians may have helped the cause by selling the idea of distance education both to government leaders and to those who lacked other educational alternatives. Perhaps because politicians tend to look for solutions which appear to be immediate, some have proposed that a distance mode of education would be useful in handling previously unsolved problems such as those related to the lack of educational equity. Thus, a rather powerful myth was propagated linking equity to distance education. In the positive language of political promises an open university creates the possibility of higher education for all. Few if any of the early educational planners involved in the creation of UNA would agree that the politician's goal was either feasible or desirable.

Despite some distance education organizers', planners' and implementors' warnings that the distance learning mode might not be the panacea for lack of places available in the national university system, it has served to reduce the pressures in the areas of space and placement. At least in Venezuela, it currently remains as the most visible if not the only known means for potentially increasing equity.

The question of existence and continuation of an innovative mode of education such as distance learning is a topic not lightly dismissed by policy makers and educational planners associated with such institutions who have witnessed both the flourishing and the demise of a number of them. Finding itself somewhere on a continuum between the politician's panacea for higher education and total unacceptance, university study at a distance in the LDCs has been justified by the attention it could bring to a number of issues previously untenable.

In looking at traditional schooling, the clear and continued absence of equity might be called the major failure of schooling. It has sometimes been traced to various kinds of distance barriers: geographical, socio-economic, psychological-pedagogical and information-communication differences. In the literature on various aspects of education some of these barriers appear, perhaps a bit masked, under diverse sub-headings such as lack of verbal or mathematic aptitude, socio-economic handicaps and other so-called educational deficiencies. They also appear in studies which discuss number and reason for drop-outs, and other socio-economic hindrances. It seems obvious that lack of access and self-fulfilling prophesy can be even more definitive than the factors previously mentioned.

The existence of a total distance university presents an opportunity for access to higher education for many who for a number of reasons have been up to now excluded, for example, those who live in remote areas (beyond commutable distance from the nearest tertiary institution), those who hold full time jobs, those who have insufficient grade point averages or entrance examination scores to enrol in a particular major or university. For others, to enrol in a university at a distance such as the UNA in Venezuela may be a matter of choice, for instance, those who prefer the distance approach to that of the more traditional mode.

At the social level, the total distance university has been proposed as a means of slowing the migration out of these areas which as well as being underpopulated, possess fewer economic and social resources and some of the lowest educational levels per capita. It is partly because of the new potential audience being reached that the possibility of raising the local levels of educational mode has been considered worthwhile as a means to enhance equity.

In as far as there is multidirectional communication and central-regional participation in the setting of priorities of activities in the local and regional centres, a distance university can foster and support finding local solutions through special programs to fit the needs found in each specific geographical area. In fact, finding personnel suitable for such tasks locally is often extremely difficult. A centralized university which administers a vast network of local and regional centres should be able to disseminate general information more efficiently.

One of the principal problems of distance educators in the central office is weaning the students and tutors from the idea that in the absence of face-to-face instruction, a surrogate person must be provided to teach. A premise of this approach is that the text and materials can facilitate learning through prescribed student interaction with them. This is assessed ideally in a non-face-to-face situation. This matter appears to involve far more than re-education and remains to be accomplished.

The difficulties in surmounting distance barriers may seem self-evident, but identifying the sources of these difficulties in order to propose workable solutions has sometimes remained elusive. It is felt that an adequate description must go beyond an analysis of the factors involved to the relationship of those factors to each other (sub-sets) and to the whole (sets). Some sort of hierarchy must be established in order to begin to carry out this task.

Concurrently, distance has provided both obstacles and opportunities to increasing equity. Redefining distance in a number of ways which include other relationships and circumstances, plus those which refer to the usual temporal or spatial remoteness, should help to widen equity through the distance mode.

It seems clear that even though the results of DE were unplanned and even debunked by some of its founders, DE may in fact have fostered and promoted unforeseen benefits in Venezuela. This paper from its beginning has discussed some of the means it may employ to educate in the future. These are expected to cross multifarious barriers including the regional barriers of distance and isolation. It is thought that by directing the present structure away from traditional university practices towards attaining some of the innovative goals of a total distance teaching university that increased equity will be found.

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Teaching at a distance and learning in the community

– two initiatives to increase educational choice in rural Australia

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THE BACKGROUND

The N.W. Council for Community Education was set up in 1979 in response to Government concern about the low participation rates in "post-secondary" education.[1]

This term causes some confusion, but the majority view then in the N.W. Region was that it embraced all education "after high school", which in Tasmania, ends after Grade 10, when the School Certificate is issued. As there was then no provision at all for higher education in the N.W. Region, which comprised 25% of the population, the Council concentrated its efforts initially om getting local provision of higher education and better access to external study.

However, the major student group has always been the mature-age part-timer and it has become abundantly clear that a major objective of Government is to increase full time participation by young students as noted at the 1983 ASPESA Forum.[2]

The Council therefore decided to direct its efforts more to the factors affecting the flow-on post grade 10. It developed a Mission Statement embracing this and highlighted debate on these in its 1984 and 1985 Annual Conference. [3,4]

From the 1984 conference came specific recommendations on "How to Keep Kids at School Voluntarily" – it was decided to concentrate during 1985 on implementing one such recommendation. "Community Based Learning contracts" as a way of increasing not only the relevance of school for the more practical students, but also choice and diversity for very small numbers.

At the end of 1985, there was considerable interest in the report of the Australian Education Task Force on Education and Technology which highlighted the potential of information technology for education.[5] Given the long standing interest of one of the authors (MGW) in distance education, the Council endorsed his recommendations that it concentrate on telecommunication in education for 1986 and 1987.

TELECOMMUNICATIONS FOR INCREASING CHOICE AND DIVERSITY POST GRADE 10

The initial experiments in this were conducted in the Southern Region of Education. Basically the thrust was to link a Hobart Senior Secondary College (Rosny) with two country District High Schools, which cover the K-10 curriculum (Oatlands and Triabunna) to include Grade 11 English and Biology. The evaluation of this has been reported elsewhere.[6]

A Composite Class for Language Teaching

Early in 1987 money became available to purchase equipment for experiments in the N.W. Region of Education. It was decided that the initial experiment would be to teach Indonesian at a distance and at Grade 8 level – this was a little outside the guidelines of the project, but it was in response to a real problem, i.e. limited expertise in the teaching force and real, but limited, demand for the language in any one school.

The equipment initially purchased was three "Hybrid" group terminals from the Brisbane C.A.E. On the advice of one of the authors (MGW) these were modified to take headsets as well as microphones. This limited the number of participants to four but with the great advantage of "duplex" (two way) audio, rather than "simplex" (one way) – initial experience with teleconferencing had shown significant resistance of some teachers to the strict protocol required with simplex audio.

The initial step was a teleconference between the three schools chosen for the experiment (Latrobe, Rosebery and King Island), the N.W. Council and the Northern Territory Correspondence School, which has a well developed Indonesian program. As a result of this, the Correspondence School agreed to provide copies of the resource tapes and assignments used in its correspondence packages to the Tasmanian schools and the composite class of 12 grade 8 students (4 each at the different schools) had its first tele-lesson on May 13.

A demonstration of this composite tele-teaching was arranged for the parents of the children involved, and also the N.W. Council, on May 29. There was discussion for an hour at each centre on the reaction to the experiment and then a final teleconference was set up for the groups to share their reactions.

It is too early to evaluate this experiment but one student transferred from King Island District High School to a Launceston High School in the second term when the family migrated. According to the teachers, if anything, she was slightly ahead of the Launceston class and had a larger vocabulary – she was certainly not disadvantaged by having been taught in this way.

A Remote Class for a TAFE Business Studies Teacher
At the same time that the Indonesian class was being organised, there was a request from King Island for any short courses in Business Studies. Previous requests had been catered for by the teacher flying to the island and setting work to be done before his next visit but the travel was expensive and the attrition high.

After discussions with the teacher, it became apparent that the work set previously to be done in isolation could be discussed by telephone. Copies of the work were sent to the group and the teacher rang them at the High School for av weekly start and finish to their session. As ten people wanted to do the short course (on Book-Keeping for Small Businesses) and there were only four headsets, another modification was made to the "Hybrid", namely a beak-out junction box enabling a further seven headsets to be plugged in.

This course has now finished. All ten people who started, completed it, and want to do more in the series. In future, there will be one face-to-face session before the tele-classes.

THE POTENTIAL FOR TELECOMMUNICATION IN EDUCATION IN THE NORTH WEST

The Negatives:
The population density is such that e.g. there is only one Telecom teleconference bridge in the whole of Tasmania and the facsimile machine that has been installed at King Island District High School, is the only one on the island.

There are very few technicians capable of installing and maintaining such equipment and there were an inordinate number of technical problems (due in part to sheer operator in experience but also to trialling prototypes) – even if they *were* available, the one airline service to King Island is frequently booked out at peak periods.

Further, there is a common belief within the teaching force that tele-teaching is not as "good" as the "real thing" (i.e. face-to-face traditional teaching) though this is not peculiar to the North West.

The Positives:
In response to the question "The best thing about the experiment was. . ." the student were unanimous in saying "the equipment". All students at Latrobe had "Walkman" radios, for instance, and rapidly took to the equipment. (It has already been noted that on the basis of one student, tele-teaching is at least as effective as face-to-face).

Further, the parents were realistic enough to note that in the context of dwindling populations and limited resources, spreading specialised services in this way is perhaps one only a few options open to the Education Department.

PERSONAL STUDY CONTRACTS FOR CREDIT

The concept of one-off" study programmes devised after extensive negotiation between learner and mentor is not new – the post-graduate degree by thesis is essentially this, and there is an "independent study" component in many undergraduate programmes.

At the school level the concept of "negotiating the curriculum" within the classroom has been reviewed in a book of that name.[7]

Off campus, the approach is probably best developed within the American University – without Walls consortium[8] and was field tested in Western Australia in the early 1970's.[9]

The developments in the N.W. break new ground in that they offer a framework for developing a truly personal programme which could, if necessary, operate at a distance for, if necessary, only once for one student and for Credit. In the context of Distance Education this has obvious advantages for solving educational problems within the classroom.

Saddle Making for a School Refuser

The first contract to be drawn up was for a Grade 10 boy who had increasingly demonstrated during Grade 9 that he could not see the relevance of most of what his High School had to offer, but did have a passionate interest in saddlemaking and leatherwork, stemming from his family life on a horse property.

He completed two contracts based on a saddlemaking business. Detalis are given in Appendix 1. His teachers considered he learnt more basic arithmetic and communication skills in the forty hours of the contract than in the previous year at school. Further

- he raised his Level in one school-based subject from Level I (Basic) to Level III (Advanced)
- his behaviour in the school improved significantly
- he has now set up his own leatherwork business.

Whilst the contracts were being field tested, there were extensive negotiations with the Schools Board of Tasmania to explore ways by which such Contracts could be accredited – it was perhaps fortuitous that "the Future of Certification in Tasmania" (the title of a Schools Board discussion paper) is being vigorously debated at present.

A sub-committee of the Syllabus Development Committee prepared a series of recommendations on this (Appendix 3) which were received by the Board early in 1987. The final outcome was a statement of procedures approved by the Board in July (Appendix 4).

Industrial Chemistry for a Gifted Student

The next contract was drawn up for another Grade 10 boy in the same High School. He was an outstanding student who had decided to go to University to study Chemistry and needed to be extended. He completed one contract whilst based on the chemistry laboratories at the local paper pulp mill. Details are given in Appendix 2. His teachers asked him to report on the application of the science theory he had been taught at school, which he did with enthusiasm. He is now in Grade 11 and even more motivated to study at University.

THE POTENTIAL FOR STUDY CONTRACTS TO INCREASE EQUITY IN EDUCATION IN THE NORTH WEST.

The Negatives:

Many concerns were expressed as to how the approach realted to the Work Experience programme – these came from the Committees co-ordinating this, which comprised Department Administrators and Union Representatives. As a result, the first contracts were delayed by almost a year.

These centred on (from the Administration) control, co-ordination and insurance problems and (from the Unions) unpaid labour and workers compensation issues – none were purely educational concerns but they proved to be serious.

The Positives:

No one who was actually directly involved with the contract approach doubts its effectiveness – in particular, the parents and the learning consultants became more and more enthusiastic as they understood the implications, and it has become a good vehicle for "school" an "community" to communicate more.

CONCLUSION

Judicious use of telecommunications technology has potential for expanding choice and diversity in small, scattered populations, at the secondary level, by enabling the country high school to outreach a greater clientele, so that viable composite groups can be assembled to satisfy Department ratios. Similarly, personal study contracts have the potential for not only coping with the very small numbers inevitable in isolated communities, but also for offering an acceptable alternative for those "refusing school."

The biggest impediments are organisational, but not educational.

Acknowlegments:

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Developing distance education through institutional collaboration on courses — a faculty perspective

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In the development, production and dissemination of distance learning materials the benefits arising from institutional collaboration on an international scale are widely recognized.[1] Significant potential gains include:

- broadening the course profile of one institution by adopting or adapting courses produced by another;
- improving the quality and/or reducing the costs of courses by collaborating in the production of components within courses or courses as a whole;
- contributing to staff development through a widening and deepening of working contacts between participating institutions.

The value of course collaboration is self-evident. Difficulties arise not in recognizing its worth but in establishing procedures through which it can be realized. In this respect it is useful to draw the basic distinction between "transfer" of expertise, information, materials and "pooling" of expertise, information, materials.[2] Adoption, adaptation and co-production of course materials constitute an ascending order of collaborative activity which implies movement, though not necessarily progression, from transfer to pooling. Pooling, by its very nature, is a much more complex activity than transfer.

Some providers of distance education have invested heavily in course adoption as a mode of collaboration. Thus the International University Consortium of the United States, in its first phase of development in the late 1970s, mainly relied on courses produced by the British Open University. The Open College, a constituent college of the University of East Asia founded in 1982, continues to make a virtue of the fact that it uses course materials prepared by other universities. In the words of its prospectus: "The College is, therefore, able to select from the best courses available and to bring to students in Hong Kong and Macau courses which have been prepared by teams of experienced academics. Many people go overseas from Hong Kong and Macau to study, the Open College brings overseas courses to those people who are unable to study abroad."[3] Along similar lines, students in Malaysia, through the auspices of DISTED, have access to external degree programmes originating from Murdoch University, Australia and the British Columbia Open University, Canada.

Collaboration on this scale tends to be organized on an institutional rather than a Faculty level with little or no academic involvement between the two organizations. Even when courses from one institution are adapted or reshaped for use in another there need not be any academic contact between the original producers and the secondary adaptors. So the notion of transfer still holds. On the other hand co-production of course materials, by definition, implies a pooling of resources with significant academic, administrative and operational implications for the participating institutions.

I would like to consider the question of co-operation in general and co-production in particular not by taking a macro-view but by looking at the response of a particular Faculty — in this case the Faculty of Arts at the British Open University — to the issue of collaboration.

The Faculty of Arts produced its first course — a Foundation course in the Humanities — in 1971 and during the 1970s developed a profile of courses at different levels along the following lines:

- inter-disciplinary courses covering aspects of the Ancient World, Reformation and Renaissance Europe and Europe in the Age of Revolutions;
- specialist courses in the disciplines of history, English literature, philosophy, music and the history of art and in the areas of the history of science and the study of religion.

In those pioneering days of distance education these courses made a considerable impact and a number were adopted for use in various parts of the world. From the late 1970s, as the Faculty moved into its second-generation of course production, the idea of collaborating with other institutions gathered pace. The catalyst was a successful partnership between the Open University and Miami-Dade Community College, USA in the production of a television series for a course on Drama. As a direct result of collaboration both sides benefited from a course component which was of a higher quality than either institutions could have reasonably produced from its own resources. With co-operation with institutions in the United States firmly but not exclusively in mind the Faculty endorsed the idea that collaborative course production should become a major area of development in the early 1980s.

In the event course collaboration along the lines envisaged was not achieved. In some respects this is not surprising. Formal Collaboration between two or more autonomous institutions with their own decision-making processes, their own academic, operational and administrative structures, their own course delivery systems and their own academic priorities is a rather delicate flower. Its nurturing requires favourable internal and external conditions for the participating institutions, a long timescale to allow for the integration of academic and operational plans, a deep commitment from the staff involved — and perhaps a little luck.

From our standpoint the increasing severity of cuts in the OU grant made us inward-looking and focussed our energies on survival as an institution. The atmosphere generated by reductions in the numbers of courses offered to students and falling staff rolls is not conducive to external collaboration.

Now as we are entering our third generation of course production I think the climate is changing, in part because the Faculty and the University have faced up to the implications of grant-reductions and in part because of a number of recent initiatives within Europe.

Current trends are creating a favourable context within which collaboration can be realistically considered. In the wider context the EEC is giving active encouragement to co-operation and collaboration. The so-called COMETT scheme (Community in Education and Training for Technology) has been put in place and, of more importance for the Humanities, the ERASMUS scheme (European Community Action Scheme for Mobility of European Students) was adopted in June 1987. Apart from encouraging student mobility the ERASMUS scheme carries a brief to promote inter-university co-operation including joint curriculum development. At aparliamentary level the European Assembly has recently addressed itself to the question of promoting Open Universities in Europe. Meanwhile the major providers of open learning have formed themselves into a European Association of Distance Teaching Institutions with a major objective being to support co-operation in the field of course development.

Within the Open University itself the institutional benefits of collaboration are again being canvassed. An inter-faculty working group on course development is pressing the merits of course transfer and joint course development with other distance teaching universities as a means of expanding the number of courses available to British Open University students. Towards this end it has recommended that an appropriate mechanism be established within the university for co-ordinating and disseminating information on collaborative links with institutions overseas.

This recommendation in turn reflects a growing interest within the Open University and in other distance teaching institutions at the prospects of collaboration. As far as the Arts Faculty is concerned we have attempted over the last two or three years to develop a framework within which collaboration can be actively pursued, beginning initially with staff exchange on a course-specific basis and then moving upwards to bi-lateral discussion on co-operation at a Faculty planning level.

Individual contacts are important in developing working relationships between potential partners but, essentially, collaborative schemes require an institutional rather than a personal focus if they are to be successful. A crucial and perhaps neglected element in developing the institutional dimension is the input that can be made at a faculty level — that is to say, at the point where courses are planned and made — by staff who by virtue of their position are able to promote curriculum development and change. This can be illustrated by contacts at dean/head of department level between the Arts Faculty at the OU and the Faculty of Cultural Sciences at the Dutch Open University which have resulted in:

(i) the adaptation for Dutch students of two courses in the history of science and the history of art;
(ii) the identification of a number of areas of interest in our respective medium-term course planning where there is scope for collaboration.

Direct experience of working on course collaboration at a faculty level suggests a refinement to the transfer-pooling model of collaboration outlined earlier. Adoption/adaption on the one hand and co-production on the other can, as we have seen, be regarded as separate and unrelated activities in the area of institutional co-operation. But adoption-adaptation-co-production can also be seen as stages on a collaborative continuum and such a perspective can usefully assist institutions in developing a sense of partnership. Bi-lateral exchanges between the British and Dutch Open Universities have convinced me of the need for a wider forum in which the teaching of the Humanities by distance methods can be explored. A framework that permitted arts faculties in distance teaching institutions in Europe and elsewhere to consider the possibilities of collaboration in the light of their current output and their own medium or long term teaching plans would significantly enhance the prospects of collaboration. Such a mechanism would have three essential elements:

(1) Case studies prepared according to a prescribed format, e.g.:
  - aim and objectives of the Faculty;
  - structure, organization and staffing;
  - course creation methods;
  - course presentation methods;
  - methods of assessment;
  - length and structure of courses;
  - list of courses currently on offer;
  - list of courses planned over the next five years

and forming a data base for each institution which could be regularly updated.

(2) Reports and papers on themes and issues of relevance to institutional co-operation, e.g.:
  - course accreditation and joint registration of students;
  - summer schools and student exchange programmes;
  - educational materials and copyright laws.

(3) A facility for meeting of participants to discuss projects with collaborative potential.

It is recognized that there are always likely to be factors which inhibit collaboration. These include:

- the language the course is written in;
- cultural relativity within a course;
- integration of material across different media which makes for difficulty in course transfer;
- the length, credit value and level of various course offerings;
- the requirements of fitting a course into an existing profile.

A framework for co-operation along the lines just suggested would assist in addressing the very real problems and practical difficulties associated with course collaboration. The difficulties need to be offset against the potential gains. Collaboration will not replace course production in the Arts Faculty of the Open University but, as we look towards the 1990s, it seems to be an entirely appropriate and desirable method of enhancing our course offering to students.

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"Unto everyone that hath shall be given? — an analysis of graduate outcomes at the Open University of the United Kingdom"

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INTRODUCTION

While much has been made of the Open University's unique course production and delivery system it could be argued that its most important contribution to the development of adult higher education was its decision to abolish entry qualifications. Just how revolutionary such a move was, given Britain's highly selective higher education system, can be gauged from recent survey findings that showed that whereas 88% of the population had heard of the Open University, one half of them were unaware of this open access policy (Open University 1986).

Removing the requirement for entry qualifications does not in itself make a university "open". For example, if somebody with no educational qualifications cannot afford the course fees then the university is not open to him or her in any genuine sense. The proof of "open-ness" must be based on an examination of who the students are, what progress they make with their studies and what benefits they derive from this experience. The first two topics have been covered by the present author in a recent paper (Woodley, 1987) and these are summarised briefly below.

DEMAND AND PROGRESS

- Approximately one in ten of the applicants for undergraduate places have no qualifications at all and four in ten do not have the qualifications required for entry to conventional degree courses. These figures have remained fairly constant over the last ten years.
- Those with low qualifications fare worse than the highly qualified in their first year of study. This is true on each foundation course but is most marked for Maths. The gap between those with high and low qualifications does not seem to be widening.
- Those with low qualifications are less likely to graduate and the situation appears to be worsening. For example, whereas those holding teaching certificates graduate at a constant rate, the rate for students with no qualifications at all has declined over the years.

To summarise still further, the Open University has found it difficult to attract large numbers of extremely educationally disadvantaged people and as a group they find it hard to make academic progress. In this paper we want to take the debate one stage further and examine whether the whole process was worthwhile for the small minority who actually managed to gain a degree.

GRADUATE OUTCOMES

In a study of graduates from conventional universities it was found that those from the working classes were less likely to enter the very high status professions (Kelsali et al 1972). This was not because their degrees were inferior to those of their middle-class counterparts but rather that their original choice of course and subsequent career aims were restricted by their class background. Thus "discrimination" by social class existed even after graduation.

The situation at the Open University is very different in that it concerns adults who are generally in mid-career and many are not studying for vocational reasons. Thus "job after graduation" cannot be taken as a simple outcome measure — there are other types of "benefit" and job changes are not necessarily a result of Open University studies. However, although benefit may have to be measured in other ways it seemed important to look for differences in the amount of benefit obtained by different groups.

One hypothesis might be that those with the least qualifications have the most to gain by obtaining a degree and, therefore, should record higher levels of benefit. However, we already know of one highly qualified group who stood to gain a great deal. Those with teaching certificates who gained an Open University degree would generally receive an automatic pay rise and could then go on to apply for headships.

METHODOLOGY

The results presented below are based on a survey of over 4,500 people who graduated from the Open University between 1975 and 1984. The sample was stratified to ensure adequate numbers of men and women, teachers and non-teachers, Ordinary and Honours graduates and early and late graduates. An overall response rate of 72% was achieved and the respondents were "weighted" to ensure that they were representative of the total graduate population.

For analysis purposes we have divided the graduates into four groups based on their entry qualifications:

LOW	Below A levels, i.e. those who did not possess the conventional entry qualifications for higher education.
MEDIUM	A levels or their equivalent i.e. possessing the conventional entry qualifications.
HIGH	Some higher education qualifications e.g. University diploma or degree, HNC, HND.
TC	Teaching Certificate. These have been kept separate from the previous group because of their large numbers and special interest.

THE EFFECTS ON DIFFERENT DIMENSIONS OF GRADUATES' LIVES

Table 1 shows the percentage of graduates recording a "good effect" on various aspects of their lives produced by their Open University studies. The figures confirm that it was indeed the teachers who experienced the highest level of occupational benefit and those with low qualifications experienced the least.

However, in other areas it was those with medium and low qualifications who gained most benefit. This was true in relation to their family life, their social life and themselves as members of society. The graduates with low entry qualifications were also the most likely to note the good effects on themselves as persons but this was very common in each group.

Table 1. The % noting a "good effect" on various aspects of their lives

	Entry qualifications			
	Low	Medium	High	TC
You as a person	85	81	79	83
Your social life and relations with others	48	49	38	39
Your family/family life	31	30	21	24
Your job/career	45	53	53	66
You as a member of society	60	58	50	51

OCCUPATIONAL BENEFITS

Table 2 shows that the types of occupational benefit gained varied depending upon the graduates' entry qualifications. For teachers and others with high qualifications the benefits tended to be in the form of better pay or promotion. These were also important for those with low and medium qualifications but switches to new occupations were much more common.

BENEFITS AS A PERSON

Table 3 shows the ways in which those with medium qualifications, and especially those with low qualifications, were much more open to personal change. This first experience of higher education clearly had profound effects on many of them in terms of self-confidence, new horizons, communications skills, etc.

Table 2. The % noting types of occupational change for which their OU qualifications had been important

	Entry qualifications			
	Low	Medium	High	TC
Better pay, extra increment	17	17	19	52
Promotion to a higher grade	15	17	21	34
A new occupation	18	21	10	7
More specialist job in same occupation	7	8	8	16
Switch of specialisation within occupation	3	6	6	9
Re-entered paid employment	6	6	3	4
Became self-employed	1	2	1	*
Achieved management status	7	7	9	9
Moved to new firm/organisation	8	11	8	4

* means <0.5%

Table 3. The % saying various types of personal change had happened "to a great extent".

	Entry qualifications			
	Low	Medium	High	TC
Aquired a new way of looking at things, a different perspective on life	30	26	17	16
Become more self-confident	29	25	15	16
Developed new ideas/gained knowledge that I want to put to practical use	26	24	19	20
Acquired new horizons, new goals	24	25	14	15
Become better able to communicate with others	24	18	10	8
Feel I know myself better	21	14	11	11
Developed new interests, quite different from those I had before	20	16	10	8
Become a more balanced, mature person	18	15	8	10
Become much more a person who can take the initiative where necessary	16	13	8	9
Become more interested in helping people who are in need	13	8	6	8

OVERALL BENEFIT

The only feasible way to summarise the various types of benefit gained by graduates is to ask them for a subjective assessment of overall benefit. Table 4 shows the responses to such a question and records the percentage who said they gained "enormous benefit" from their Open University studies.

First the Table shows that those with low or medium qualifications recorded much higher levels of benefit than the well-qualified. Secondly it supports a "value-added" hypothesis concerning educational benefit. The most benefit was recorded by those with low qualifications who gained a good Honours degree and the least by those with high qualifications who only gained an Ordinary degree.

Table 4. The % noting an "enormous benefit" derived from their Open University studies.

OU degree gained	Entry qualifications			
	Low	Medium	High	TC
Ordinary	25	24	11	16
Third or Lower Second	34	26	22	25
Upper Second or First	38	36	25	34
All	27	26	14	18

CONCLUSION

The evidence presented does not support the view that those with low entry qualifications remain "disadvantaged" after graduation. They record high levels of personal, social and overall benefit. It is only in the occupational sphere that less benefit is noted.

The certificated teachers have been the main beneficiaries in occupational terms for reasons that have been mentioned earlier. The relative lack of occupational benefit gained by those with low qualifications is slightly disturbing and requires further investigation. Preliminary analysis suggests that this may be because they are older (34% of the LOW group were aged over 50 when they graduated compared with the 17% of the MEDIUM group), they are less likely to proceed to an Honours degree and they are less likely to gain a good Honours degree.

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A renewed emphasis on nurturing in the counselling of women

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An evaluation of an assertiveness training workshop for women offered by Athabasca University yielded some findings that have implications for the themes emphasised and approaches used in counselling women in Canada (Young, 1987). The extent to which cultural values may enhance or limit the usefulness of the approaches in other cultures has not yet been considered.

Those who counsel women are aware that most women are concerned about the welfare and development of others, even to their own detriment at times. Women's self-esteem rests, in large part, upon the extent to which they are able to fulfil a nurturing role. The effectiveness of interventions in counselling women, whether those interventions are with groups or with individuals, can be enhanced by encouraging women to direct their nurturing skills towards themselves as well as towards others.

A brief examination of some of the elements of the evaluation study assists in understanding the importance of the findings and implications. First, there is consideration of the theorists whose ideas influenced the course of the study. Second, there is a brief description of the evaluation methods used, with an emphasis on the analysis of qualitative data. Third, there is a consideration of the major findings of the study. Finally, there is an examination of the implications of the findings in the counselling of women.

THEORETICAL FOUNDATIONS

Two women theorists, Jean Baker Miller (1976), and Carol Gilligan (1877:1982), have criticised the prevailing idea that men are the active, independent agents in society while women fill a lesser, passive role. The two have argued that women have a different and equally valid pattern of development that has not been adequately acknowledged by male theorists. Women's pattern of development is characterised by an ethos of caring for and integration with others, in contrast to men's pattern which is characterised by an ethos of autonomy.

Miller (1976) attributed low self-esteem among women to two factors: they have not been recognised and rewarded for the effort they have expended in nurturing relationships, and they have felt unable to acknowledge or express their own needs. They have feared taking action on their own behalf because to do so might threaten the health of the relationship on which their well-being rests. Gilligan (1977–1982) expanded upon that theme with her finding that women make decisions according to whether or not they violate a principle of nonviolence. She stated that the application of that principle is so important to women that they often fail to recognise the violence that they inadvertently do to themselves when they consider only others. Gilligan found that with encouragement, women can learn to place their own needs on an equal footing with those of others.

A major principle which is fundamental to assertiveness training programs is that thoughts and feelings be expressed honestly and with respect for others (Lange and Jokobobwski, 1976). The emphasis on the interpersonal implications of self-expression is in accord with the ideas of both Miller and Gilligan, but does not exploit sufficiently women's knowledge about nurturing which can also be applied to self-care.

Specific topics and approaches in the workshop program studied were selected from an extensive body of research on assertiveness training. Tasks progress from the least difficult, giving compliments, to the most difficult, giving and receiving criticism, in order to build the skills of and increase the confidence of participants (Butler, 1976). For most women, expressing positive feelings is easy because it is consistent with their self-concept; expressing negative feelings is difficult because it is contrary to their self-concept (Muehlenhard 1983). A combination of cognitive restructuring, through lectures and group discussions, and behavior rehearsal, practice in large and small groups, is used because it leads to a greater increase in assertiveness than the use of either technique alone (Alden, Safran and Weideman, 1978; Baer, 1977; Delange, 1977; Goldfriend, 1979; Jacob and Cochran, 1982).

METHOD

Each subject completed questionnaires, — Gambrill-Richey Assertion Inventory and a Coopersmith Self-esteem Inventory — prior to the workshop, at the end of the workshop and two months after the completion of the workshop. The inventory results have quantitative data about changes in feelings and determined that women's levels of assertiveness and self-esteem increased after taking the workshop. The questionnaire responses shed some light on how the changes came about. In the questionnaires, subjects were asked about their expectations prior to the workshop, and what they got out of the program — what they like or disliked about it and whether or not it met their expectations — at the end of the workshop. They were asked about the lasting impact, if any, at the two month follow-up.

FINDINGS

The quantitative results indicated that subjects' assertiveness and self-esteem increased over the course of the study. Those findings are important because they lend support to the validity of the workshop program and of drawing any conclusions from the analysis of the questionnaires.

The questionnaire data were analysed to determine if any approaches or topics had been especially important in helping subjects become more assertive and to discover any themes that might be evident in subjects' responses to open-ended questions. Subjects' accounts of what topics or approaches in the workshop were important to them were so idiosyncratic that while no topic or approach were liked by or helpful to all, each topic and approach seemed to help some. Attempts to determine who benefitted more from one approach or topic than another proved fruitless. Whether the initial expectation was stated as the desire to acquire new skills, to increase self-awareness, information and confidence or to reduce anxiety, the favoured topics and approaches could not be predicted. The element that one woman with one stated objective found annoying, was the very element that another with a similar objective found particularly helpful.

A major theme that arose from the analysis of open-ended questions was that of the subjects' concern for the welfare of others. Subjects were concerned about the effect of their behaviour on others, and they wanted to learn how to word statements in order to minimise negative outcomes for themselves and others. Further, subjects emphasised the importance to them of practicing the newly acquired techniques to gain more confidence in using them.

IMPLICATIONS

The first implication of the evaluation findings is that workshop programs are most likely to meet the needs of all of the participants if they have a multidimensional design. That implication echoes what most counsellors know from their work with individuals: that the counselling strategy used successfully with one client will be unsuccessful with another. Counsellors need to use a variety of approaches with individuals and with groups in order to meet the needs of their clients.

A second implication is that an emphasis on the theme of caring or nurturing would benefit most counselling interventions with women. Women's self-esteem will take another battering if they are told, however indirectly, that their concern for others has been misplaced. Women need support and recognition for their concern for others, and encouragement to give their own needs a similar emphasis.

The third implication follows from the previous one: it is crucial for women to learn how to express themselves in a way that demonstrates their care for others. Women want to learn how to express ideas and concerns, especially negative ones, not in theory, but in specific words and phrases in response to specific situations. They also want to have ample time within the workshop to practice the new behaviour.

The latter two implications, like the first one, are as important in counselling individual clients as they are for workshop settings. Those implications emphasise the importance of giving support for what has been a major focus in women's lives, nurturing others. That emphasis will help women to acknowledge and value the skills that they have acquired. It will support their self-esteem while helping them to use those nurturing skills for their own benefit.

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The development of higher distance education in China

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China has two systems of higher distance education, correspondence education run by traditional universities and colleges, and the Radio and Television University of China (RTUC). The former was established in the early 1950s. The RTUC was founded in the late 1970s.

The People's University of China was the first university to run higher correspondence education in China. In February of 1952, the first students enrolled in Beijing, Tianjin and Taiyuan. About 3,000 correspondence students registered after passing the entrance examination.

By 1986, 311 out of 1,054 Chinese universities and colleges had established systems to offer courses by correspondence. The number of correspondence students totalled 360,000. In 1987 more than 500,000 correspondence students are enrolled in more than 500 universities and colleges. A complete system of correspondence specialties has been established including. Chinese language and literature, history, science, engineering, law, economics, political science, teacher-training, agriculture, forestry, medicine, traditional. Chinese medicine, music, painting and dance. About 200,000 undergraduates have graduated from the correspondence departments of universities and colleges. A small number are now key leaders in the party and government. Most are the backbone of in factories, companies and other departments.

Distance education by radio and television began in the early 1960s. The Radio and T.V. (RTV) University of Beijing was founded in 1960 and the RTV University of Shanghai and Shenyang followed. The RTV University of Beijing trained more than 8,000 college students and more than 50,000 single subject students from 1960 to 1966. These three, the best radio and T.V. universities, only lasted until 1966 when the so-called Cultural Revolution began.

The RTUC was founded in 1979 and has enjoyed the support of the leadership of party and government as it has especially suited the needs of training a great number of specialists in a short period for socialist economic construction. The pace of development of RTUC has quickened since 1980.

The RTUC is a consortium of RTV universities, consisting of 29 RTV universities of provinces, municipalities and autonomous regions, 335 RTV universities of prefectures and cities, and nearly 2,000 county divisions of RTV universities distributed over China. The regular undergraduate students numbered 700,000 in 1985, so it has become the biggest distance educational university in the world.

RISING STATUS

China is a developing socialist country. Education is very backward, although higher education has developed rapidly since the founding of the People's Republic of China. The number of college graduates per 10 thousand of population is still very low. The following table shows the total number of undergraduate students and the average number per 10 thousand of population:

In 1986 the total number of undergraduated students in traditional universities and colleges exceeded 2,000,000. Allthough the number of graduates now averages more than 20 per 10 thousand of population, this is still far less than in the developed

Year	1965	1978	1979	1980	1981	1982
Total No.	674,000	856,000	1,020,000	1,144,000	1,279,000	1,154,000
Graduate No. per 10 Thou.	9.3	8.9	10.5	11.6	12.8	11.4

countries. This is a problem for socialist economic construction as China must train millions of junior and senior technicians, managers, directors, engineers and various experts. This is why China took vigorous measures to develop higher level distance education in the early 1950s.

The Ministry of Education has given much support to developing higher correspondence education. The plan for developing correspondence education at the People's University of China was approved by Liu Shaoqi, the chairman of People's Republic of China. This showed that higher level correspondence education was highly regarded by the government and society from the start.

Over time the mass of people in China have come to understand the importance of correspondence education and its social and academic status has risen. Before 1955 higher correspondence education was regarded purely as part time study and was not indispensable for traditional universities and colleges.

Higher correspondence education in China entered a new phase of development from 1956 to 1960, both in ideas and practice. The Ministry of Education officially declared that higher correspondence education was a component of higher education. Several operating rules were drawn up, such as that correspondence students were entitled to paid leave for at least one month a year to sit examinations, attend classes and laboratory practice, etc. The universities and colleges conducting higher correspondence education numbered 120, with 190,000 enrolments.

Ten thaotic years ended in 1976. Since then there has been great political and economic change in China. The future looks stable and prosperous. Conditions for developing higher correspondence education are good for three reasons:

First leadership at various levels is valued today more than ever before; second the number of potential correspondence students is larger than ever and they demand to learn more and to learn well; third, official directives have been issued by the State Council to implement the educational act. There were big changes in correspondence education policy, especially official recognition of the record of formal schooling of correspondence students. The correspondence student is awarded the same qualification as those who graduate from traditional universities and colleges and enjoys the same treatment in appointments and wages. This has greatly encouraged people to study by correspondence. Higher correspondence education is widely known to all workers and cadres in China. About a half million working people sit the correspondence entrance examination each year. Study by correspondence in China has become a mass learning movement. It has become vital for China's socialist construction.

KEY EXPERIENCES

To assess past experience in the light of the very good situation for developing higher correspondence education today, the national conference on Higher Correspondence Education was convened by the State Education Commission in Beijing last June. It affirmed China's key principles for higher correspondence education as follows:

(1) To give great weight to practical experience in correspondence teaching based on the principle of the unity of theory and practice. Secondly, correspondence students, whatever courses they study, must have one or two years' practical experience in the specialities they are studying.

(2) To serve socialist economic reconstruction is the only goal of higher correspondence education in China, so specialist courses offered must be those most urgently needed at each period of socialist construction. The first courses offered were Management of industry, management of commerce, and economics, finance, industry and commerce statistics, industrial and commercial accounting, civil construction, etc. This is very different from other countries' higher correspondence education which is usually based on literature and language, history, etc.

(3) Correspondence education is an organic part of the whole system of higher education in China, and therefore as necessary as traditional universities and colleges.

(4) Rigorously enforced rules and regulations guarantee complete success in the field of correspondence education. Self-study by students, must be under the control of correspondence departments and accord to the teaching rules and regulations. The rigorously enforced rules and regulations usually consist of The Rule of Status of Correspondence Students, Rules of Enrolment and Registration, Rules of Suspension and Dismissal From College, Rules of Teaching, Research Loads of Teachers, Rules of Assignments, etc.

(5) A national, united correspondence teaching process has formed gradually in the past three decades. It originated in 1955 with the first graduates from the correspondence college of the People's University of China. It consisted of the following elements: (1). Entrance examination; (2) Managing of self-study. (3). Organizing face-to-face teaching in various ways; (4) Correcting assignments; (5) Organizing laboratory experiments in engineering and science; (6) answering questions by mail or with the teacher present; (7) Judging the thesis or taking the national examination before graduation.

ADVANCES

The Third Department of Higher Education of the

State Education Commission of China was established in early 1985 and is in charge of higher adult education in China. Before the advent of the Third Department of Higher Education adult higher education, including higher correspondence education, was controlled by the Adult Education Department of the State Education Commission. The founding of Third Higher Education Department proves that higher correspondence education is firmly on the agenda of the higher education system of China.

The first symposium on the management of higher education was held in Nanjing, the capital of Jiangsu province, from 17th to 26th Sept. Its main objectives were to improve the management of higher correspondence education and to draft regulations for the management of higher education for further debate.

Five correspondence department directors were asked to give their ideas about how to organize, supervise and assess the processes of correspondence teaching and how to help correspondence students study and maintain proper university standards. I was invited to lecture about trends in distance education around the world.

A Research Institute of Higher Correspondence Education and Evening Colleges has been established. Its first educational seminar, embracing higher correspondence education, began on August 16, 1985. There were more than 70 delegates from 42 universities and colleges with correspondence education evening colleges in attendance, together with the director of the Higher Education Department of Beijing and the Director of the Third Higher Education Department of the State Education Commission.

A short training class for distance educators was run by this institue in June 1986. More than 40 distance educators took part. The class dealt with the problems of management of correspondence education and the psychology of the adult.

As a necessary speciality, higher level distance education is now being taught in a teacher's college and an independent adult college has even been established in Beijing.

CONFERENCES

The third national conference on correspondence education was convened by the State Education Commission in Beijing from June 16–20, 1986. More than 140 delegates; university presidents and directors of education departments of central and local governments attended. He Dongchang, Vice Minister of the State Education Commission gave an important report entitled "Devote Major Efforts To Develop Higher Correspondence Education To Meet The Needs Of Development Of The National Economy And Society".

Delegates discussed issues met in their work, exchanged ideas on how to develop higher correspondence education in the future and revised the draft higher correspondence education regulations of traditional universities and colleges. The discussions stressed (1) How to advance understanding of the significance of higher correspondence education in socialist construction; (2) quality is of primary importance in higher correspondence education; (3) All universities and colleges must give more effective leadership to correspondence education; (4) Each institution must regard correspondence education as a basic responsibilities which must be integrated into its future plans.

The other significant matter in distance education was an all-China unified entrance examination for adult higher education that has come into operation. The first such examination for adult higher education took place on May 10–11 1986. More than 1.3 million cadres and high schoolgraduates took this unified examination simultaneously and have been accepted for enrolment based on the same standards.

No other country has convened three national conferences (1965, 1980, 1986) to discuss the problems of higher correspondence education and conducted a standard national entrance examination for distance education.

Appendix

APPENDIX 1
PENGUIN HIGH SCHOOL STUDY CONTRACT

DATE: FROM / / TO / /

STUDENT:

CONSULTANT:

SCHOOL CONTACT:

STUDY AREA: Leatherwork/Small Business Procedures

STRUCTURE: The course will consist of approximately forty hours of study. The time will be organised on the basis of six days, each day approximately seven hours. The study will take place at the premises of (the Consultant) who will provide the instruction. The day to be used will be negotiated weekly by (student) and (school contact) and then (student) is to notify (consultant) of the decision by telephone. (The student's parents) accept the responsibility of transporting (student) to and from place of work. If a problem arises at any time (school contact) is to be notified immediately. (School contact) will monitor the contract continuously.

OUTCOMES: After the contract (student) should be able to:

1. Keep a working log of a day's activities. This should include a record of the time on particular tasks, of any new information acquired, new tools used and any new skills learned.
2. Be able to complete a full costing for small leatherworking tasks. This should include some awareness of all possible costs to be taken into account.
3. Completely answer the telephone and take care of any business arising from that call.
4. Understand the way the range of tools in the area of saddlery are used.

ASSESSMENT: There is to be a meeting of all parties concerned upon completion of the contract to assess the success. Certain areas, such as the log, may be assessed by the staff of the school. This may be negotiated as the contract progresses. It is hoped that these contracts may be accepted by the Schools Board as accredited short courses. If so, then (student) may gain credit for this contract on his Schools Certificate.

We have read the Contract, have a copy of it and agreee to abide by its terms.

(Student's Name): ______________________________

(Student's Parent's Names): ______________________________

DATE: ______________________________

(Consultant's Name): ______________________________

(School Contact's Name): ______________________________

APPENDIX 2
PENGUIN HIGH SCHOOL STUDY CONTRACT

DATE: FROM / / TO / /

STUDENT:

CONSULTANT:

SCHOOL CONTACT:

STUDY AREA: Titration Procedures in Industrial Chemistry

STRUCTURE: The course will consist of approximately fifteen (15) hours of study. The time will be organised over four half days in a period of one month. The study will take place at (name of company) in (town). This Company will provide (Consultant's name) as the Learning Consultant. The day to be used will be negotiated between (Consultant's name) and (School Contact's name). Transport for (Student's name) will be organised in consultation with his parents. If a problem arises at any time (School Contact's name) will be notified immediately. (School Contact's name) will monitor the contract continuously.

OUTCOMES: After the contract (Student's name) should be able to:

1. Use the necessary equipment with precision, care and safety. This includes standard flasks, pipettes an burettes.
2. Complete the necessary calculations and use these to make a standard solution.
3. Determine the concentration of a base by titrating against an acid of known concentration.
4. Present the results of above work in a clear, concise and meaningful way.
5. Understand the need for this type of work in industry.

ASSESSMENT: There is to be a meeting of all parties concerned upon the completion of the contract to assess the success. The learning consultant will assess the students works accordingly to a rating system and by providing written comment. This School's representatives will use this assessment to contribute towards the student's Schools Board results in Science.

We have read the Contract, have a copy of it and agreee to abide by its terms.

STUDENT: ______________________________

STUDENT'S PARENTS: ______________________________

LEARNING CONSULTANT: ______________________________

SCHOOL CONTACT: ______________________________

SCHOOL PRINCIPAL: ______________________________

APPENDIX 3
THE SCHOOLS BOARD OF TASMANIA
SYLLABUS DEVELOPMENT COMMITTEE
PERSONAL STUDY CONTRACTS
REPORT OF SUB-COMMITTEE

A Personal Study Contract is a specific learning program which has been designed to meet the needs of a particular individual student. I differs from Work Experience in that the contract which is negotiated with the particular individual has a direct link with one or more subjects of the school curriculum and will therefore have a substantial learning component.

A Personal Study Contract may involve employers or the use of resources in the community but need not do so.

The sub-committee recommends that the Board should acknowledge Personal Study Contracts as a potentially valid learning experience and should therefore certificate them on the T.C.E.

This will involve creating a new category of subject, for the foliowing reasons
- these 'subjects' will be specific to an individual;
- the contract may often be negotiated after the work to be done is well under way;
- the contract or syllabus statement will be finalsied after the event rather than before.

However, consultation with the Board should take place during preparation of the contract or as soon as possible after it has commenced. At this stage, a version of the contract should be submitted to the Board. A final version of the contract should be submitted to the Board as soon as possible on a pro-forma similar to that used for Group A subjects.

A subject Advisor should visit the school and scene of the contract and discuss it with the parties concerned during its operation.

Assessment materials are more likely to be in log book form than in a series of conventional tests. The log book and, certainly, a description of the contract in the form of a folio should be available on request, as the name of the contract may not adequately convey the substance of the learning experience.

In recommending that the Board should certificate Personal Study Contracts, the sub-committee suggests that
- they should represent a minimum of 25 hours contract study time;
- as many of them will extend over a four-five week period, 15th October should be the final date for the submission of any new Personal Study Contract;
- they should be recorded on the T.C.E. in the same way as any other subject.

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APPENDIX 4
THE SCHOOLS BOARD OF TASMANIA
SYLLABUS DEVELOPMENT COMMITTEE
PERSONAL STUDY CONTRACTS

1. DEFINITION

A Personal Study Contract

(a) is a specific learning program which lies outside the normal framework of syllabuses provided by the Schools Board;

(b) has been designed by a school to meet a need of a particular student;

(c) is intended for exceptional circumstances only, e.g. where the conventional curriculum is inappropriate;

(d) while having a direct link with one or more subjects of the school curriculum, will not be part of an existing subject;

(e) may involve employers and the use of resources in the community;

(f) will be deveoped by a school and approved by the Board;

(g) should represent a minimum of 25 hours of contract study time;

(h) may be undertaken by students in either Year 9, 10, 11, or 12;

(i) will not be assessed in terms of levels and awards but rather according to whether the contract has been satisfactorily completed.

(When the T.C.E. is introduced, the awards system that applies to Group A, B and C subjects will also apply to Personal Study Contracts).

2. PROCEDURES FOR SCHOOLS WISHING TO SUBMIT PERSONAL STUDY CONTRACTS FOR APPROVAL

The following procedures are intended to ensure that

(a) the early appointment may be made of a Course Adviser who can assist a school to develop a Personal Study Contract;

(b) consultation takes place with the Board during the preparation of a Personal Study Contract or as soon as possible after it has commenced.

(i) Notification of Intention

If a school wishes to have a personal study contract certificated by the Schools Board, it should inform the Board as soon as possible of its intention to negotiate a particular contract. This will enable the School Certificate Standing Committee on behalf of the Board to appoint an appropriate Course Adviser.

(ii) Developing and Submitting a Proposal

(a) The School will prepare a preliminary outline of the Personal Study Contract and submit it to the Board.

(b) The school will discuss its proposal with the Course Advisor appointed by the Board and submit it to the Board on the pro-forma provided.

(c) The Course Adviser will provide the Board with a preliminary report on the contract as it has been or is being developed and with a recommendation as to whether the Personal Study Contract should be approved for School Certificate purposes.

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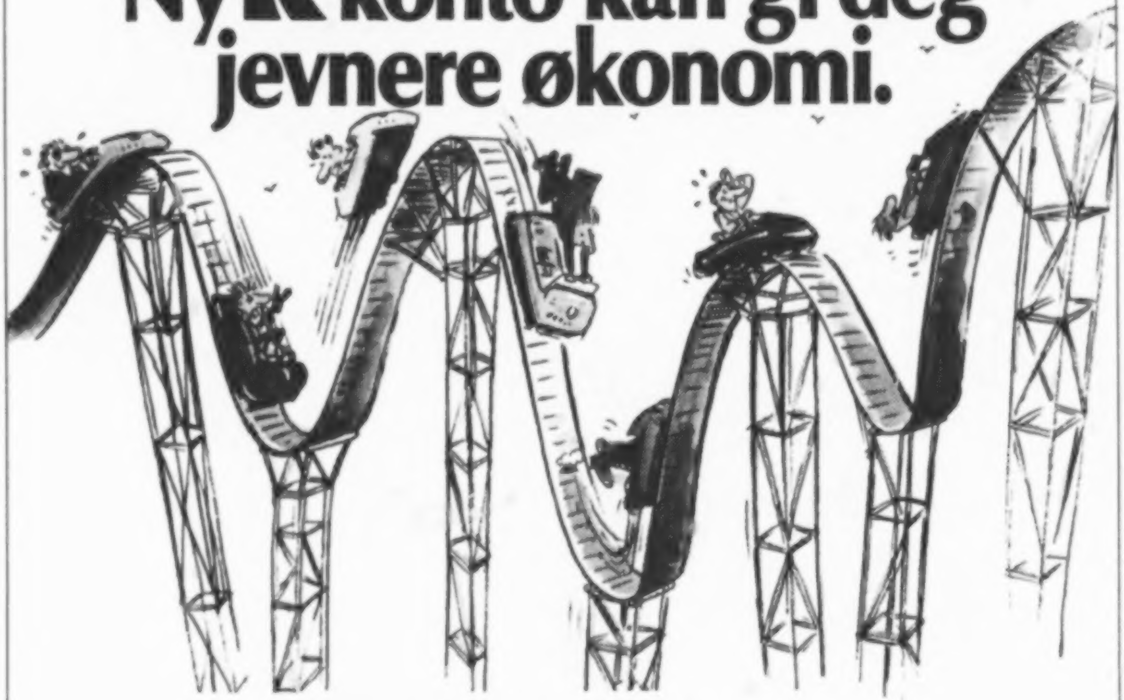

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